

DATE IN 8/17/07	SUSPENSE	D. BROOKS ENGINEER	LOGGED IN 8/17/07	TYPE SD	APP NO. TD50722952201
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ABOVE THIS LINE FOR DIVISION USE ONLY

**NEW MEXICO OIL CONSERVATION DIVISION**  
- Engineering Bureau -  
1220 South St. Francis Drive, Santa Fe, NM 87505



*Parallel Petroleum*  
*Swale 1526-1687#2*  
*200723*

**ADMINISTRATIVE APPLICATION CHECKLIST**

THIS CHECKLIST IS MANDATORY FOR ALL ADMINISTRATIVE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND REGULATIONS WHICH REQUIRE PROCESSING AT THE DIVISION LEVEL IN SANTA FE

**Application Acronyms:**

**[NSL-Non-Standard Location] [NSP-Non-Standard Proration Unit] [SD-Simultaneous Dedication]**  
**[DHC-Downhole Commingling] [CTB-Lease Commingling] [PLC-Pool/Lease Commingling]**  
**[PC-Pool Commingling] [OLS - Off-Lease Storage] [OLM-Off-Lease Measurement]**  
**[WFX-Waterflood Expansion] [PMX-Pressure Maintenance Expansion]**  
**[SWD-Salt Water Disposal] [IPI-Injection Pressure Increase]**  
**[EOR-Qualified Enhanced Oil Recovery Certification] [PPR-Positive Production Response]**

- [1] **TYPE OF APPLICATION** - Check Those Which Apply for [A]  
[A] Location - Spacing Unit - Simultaneous Dedication  
☐ NSL ☐ NSP ☒ SD

Check One Only for [B] or [C]

- [B] Commingling - Storage - Measurement  
☐ DHC ☐ CTB ☐ PLC ☐ PC ☐ OLS ☐ OLM

- [C] Injection - Disposal - Pressure Increase - Enhanced Oil Recovery  
☐ WFX ☐ PMX ☐ SWD ☐ IPI ☐ EOR ☐ PPR

- [D] Other: Specify \_\_\_\_\_

- [2] **NOTIFICATION REQUIRED TO:** - Check Those Which Apply, or ☐ Does Not Apply

- [A] ☐ Working, Royalty or Overriding Royalty Interest Owners  
[B] ☒ Offset Operators, Leaseholders or Surface Owner  
[C] ☐ Application is One Which Requires Published Legal Notice  
[D] ☐ Notification and/or Concurrent Approval by BLM or SLO  
U.S. Bureau of Land Management - Commissioner of Public Lands, State Land Office  
[E] ☒ For all of the above, Proof of Notification or Publication is Attached, and/or,  
[F] ☐ Waivers are Attached

- [3] **SUBMIT ACCURATE AND COMPLETE INFORMATION REQUIRED TO PROCESS THE TYPE OF APPLICATION INDICATED ABOVE.**

- [4] **CERTIFICATION:** I hereby certify that the information submitted with this application for administrative approval is **accurate** and **complete** to the best of my knowledge. I also understand that **no action** will be taken on this application until the required information and notifications are submitted to the Division.

Note: Statement must be completed by an individual with managerial and/or supervisory capacity.

*[Signature]*

Print or Type Name

Signature

**Kellahin & Kellahin**  
**Attorneys At Law**

Title

Date

*8/17/07*

**706 Gonzales Rd.**  
**Santa Fe, NM 87501**

*TKellahin@conserve.net*

Address

# Northwest Shelf Stratigraphic Chart

Age		Unit Name		HC's	Approx. Depth
Permian 289-248 MYA	Ochoan	Rustler			Top Reservoir ~5000-5500'
		Salado			
	Guadalupian	Tansill			
		Eumont	Yates	● ☀	
			Seven Rivers	● ☀	
			Queen	● ☀	
			Grayburg	● ☀	
		San Andres		●	
		Glorieta		●	
		Leonardian	Yeso		
	Abo		● ☀		
	Wolfcampian	Wolfcamp		● ☀	
Pennsylvanian 289-320 MYA		Cisco			
		Canyon			
		Strawn	● ☀		
		Atoka	☀		
		Morrow	● ☀		
Mississippian 320-363 MYA		Miss. Lime		● ☀	
		Woodford			
Devonian 409-363 MYA		Devonian		☀	
Silurian 439-409 MYA		U. Silurian			
		Fusselman		●	
Ordovician 510-439 MYA		Montoya		●	
		Simpson	McKee	● ☀	
			Waddell		
			Connell		
			Joins		
		Ellenburger		☀	
Cambrian 510-570 MYA					
Pre-Cambrian >570 MYA					

## LEGEND



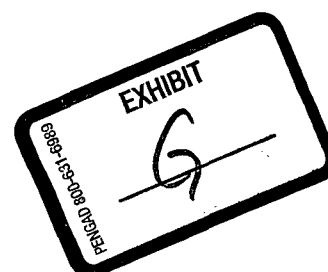
Current Active Plays



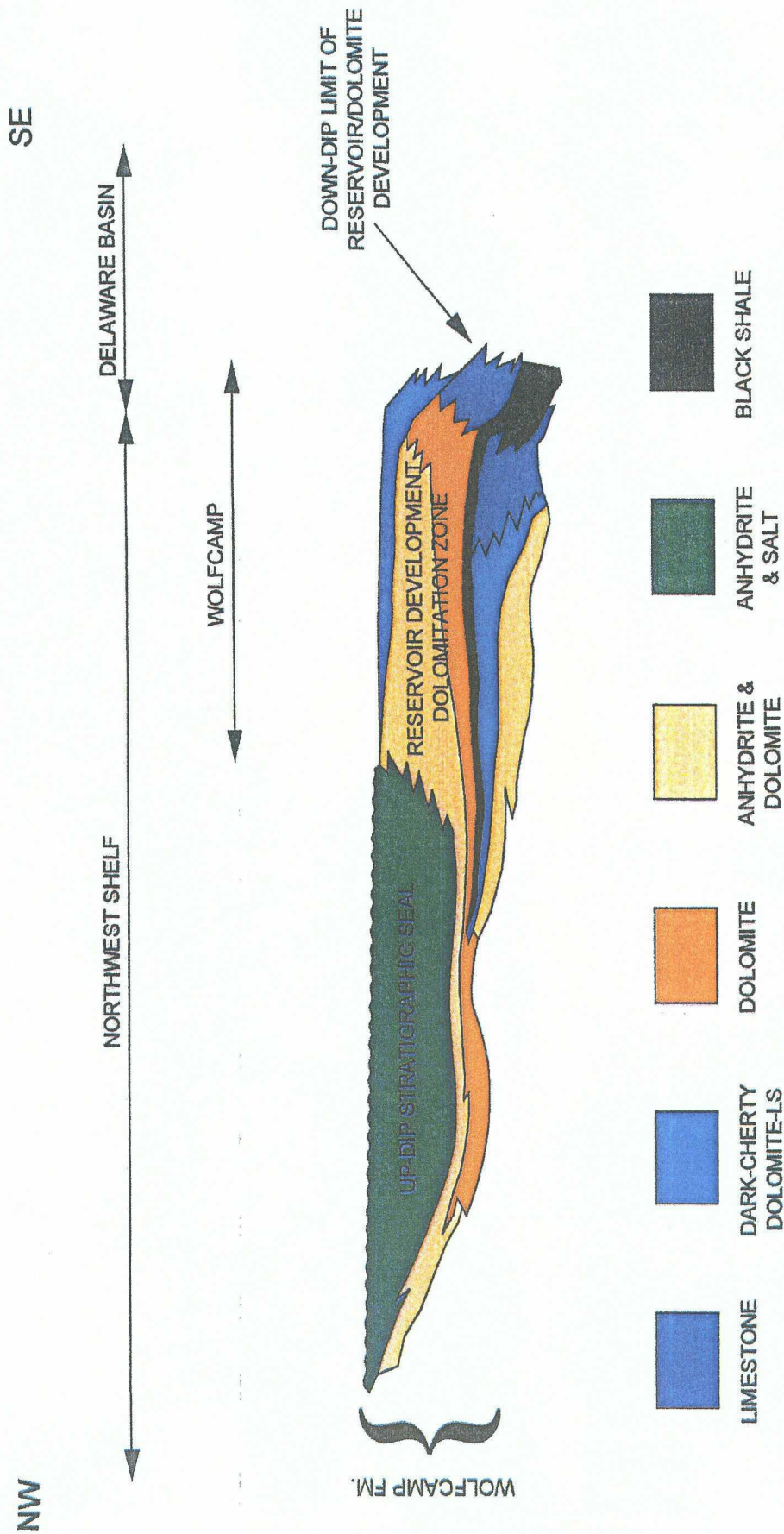
Oil Producing Zones



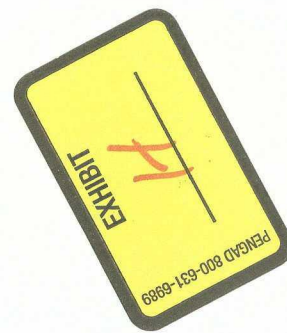
Gas Producing Zones



# CROSS SECTION & TRAP DIAGRAM

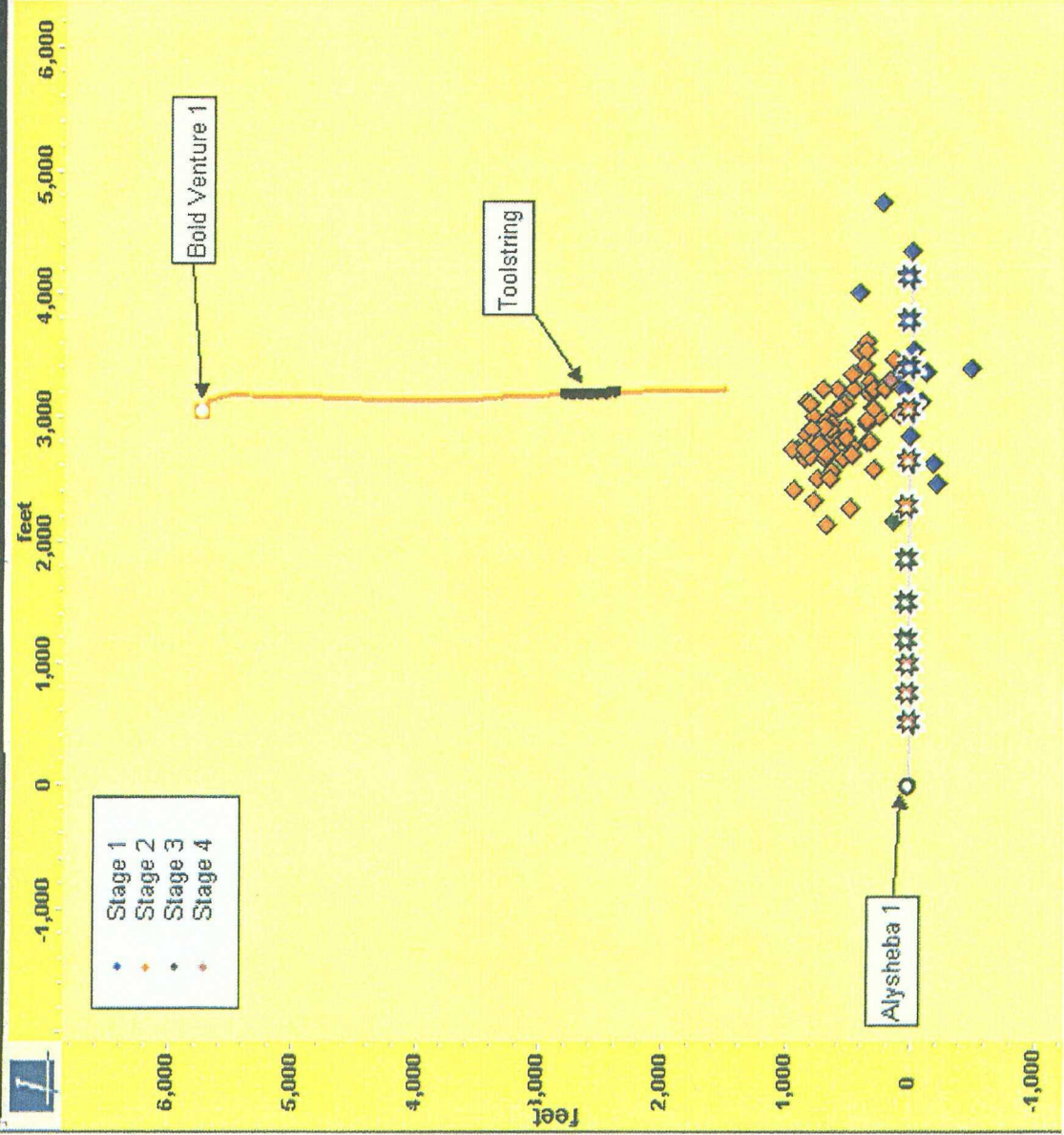


Northwest-southeast cross section across the Northwest Shelf/Delaware Basin transition. Rock types are differentiated illustrating the trap developed within the Wolfcamp reservoir. The pervasive evaporite deposits in the northwest act as a stratigraphic seal for the dolomitized reservoir developed down-dip. Further down structure the reservoir is limited by the lack of dolomite within tighter limestone and shale deposits.





# Alysheba No. 1 – Map View

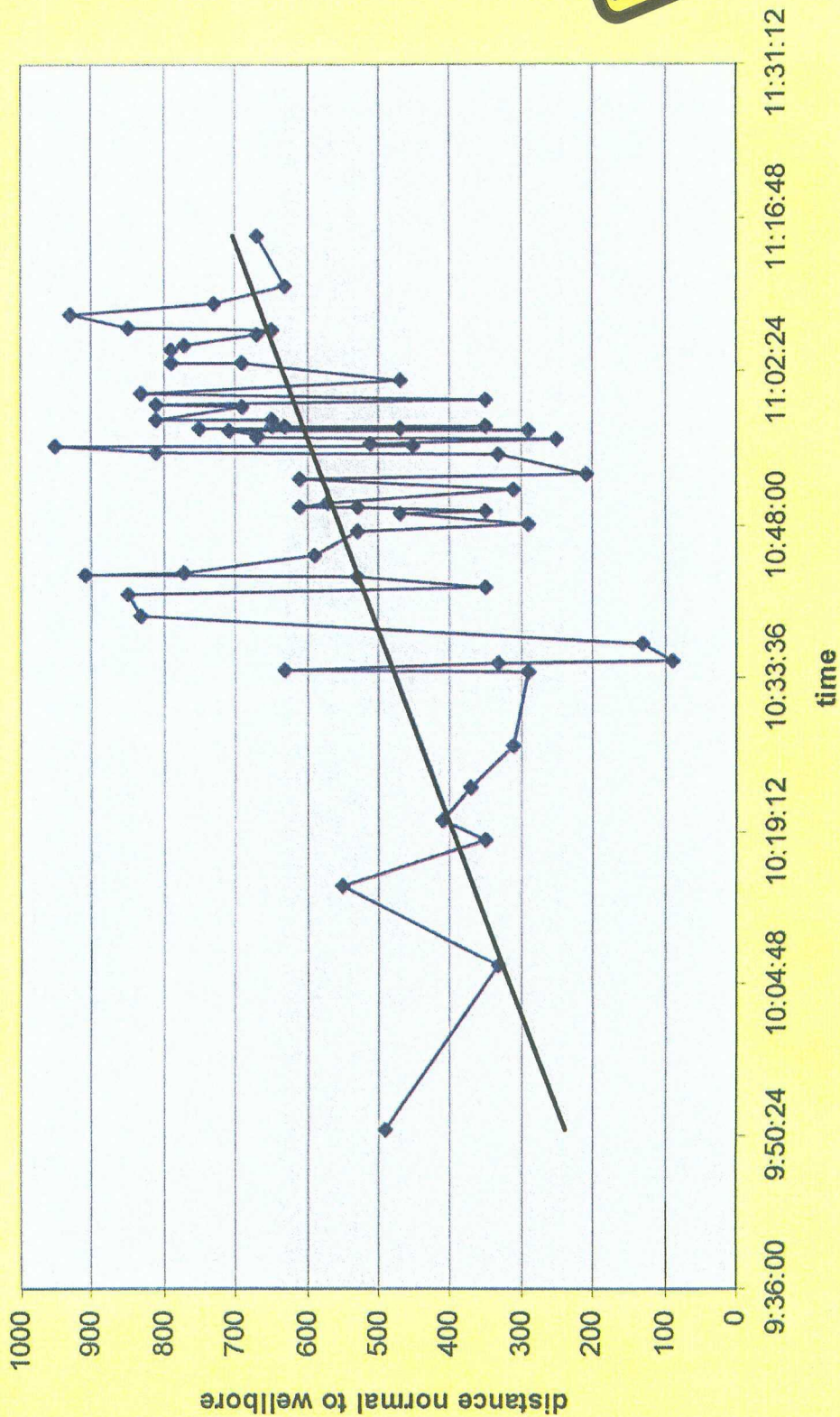


- Fracture Azimuths: Difficult to determine, possibly N-S.
- Fracture Half-Lengths: ~900' (measured North from wellbore)
- Most of the microseismic events were recorded during Stage 2. Only one event was detected during both Stages 3 and 4.
- Unclear why Stage 2 produced the majority of the events; perhaps interaction with faulting or fracture swarm near wellbore?





# Alysheba No. 1 Stage 2 – Map View





## Conclusions

- Azimuth uncertain, but has a strong N-S component
- Possibility of a N35°E secondary component
- 250 ft of height
- 900 ft of half-length, longer than Seabiscuit, but still shorter than competitors
- Low degree of complexity
- Higher pressures may not be related to oblique initiation (all stages lack of tortuosity, presence of perf friction)





Wildcat Measurement Service  
P.O. Box 1836  
Artesia, New Mexico 88211-1836  
TollFree #888-421-9453  
Office #505-746-3481  
"Quality and Service is our First Concern"

PDS 06/25/00

Run No. 261213-02  
Date Run 12/13/2006  
Date Sampled 12/09/2006

Analysis for: PARALLEL PETROLEUM CORPORATION  
Well Name: FORESO 1525-16 STATE "B" #1

GPANGL162

Field:  
Sta. Number:  
Purpose: SPOT  
Sampling Temp: 22.0 DEG F  
Volume/day: 1925 MCP/DAY  
Pressure on Cylinder: 60.0 PSIG

Producer: PARALLEL PETROLEUM CORP.  
County: CHAVES State: NM  
Sampled By: A.J.G.  
Atmos Temp: DEG F  
Formation:  
Line Pressure: 73.2 PSIA

GAS COMPONENT ANALYSIS

Pressure Base: 14.7300

	Mol %	GPM
Carbon Dioxide CO2	4.3235	
Nitrogen N2	0.6738	
Methane C1	85.9676	
Ethane C2	5.6524	1.5108
Propane C3	1.9299	0.5314
Iso-Butane IC4	0.2812	0.0920
Nor-Butane NC4	0.4872	0.1536
Iso-Pentane IC5	0.1606	0.0588
Nor-Pentane NC5	0.1404	0.0508
Hexanes Plus C6+	0.3834	0.1673
TOTAL	100.0000	2.5647

Real BTU Dry: 1078.92  
Real BTU Wet: 1060.14  
Real Calc. Specific Gravity: 0.6732  
Field Specific Gravity: 0.0000

Standard Pressure: 14.6960  
BTU Dry: 1073.62  
BTU Wet: 1054.94

Z Factor: 0.9974  
N Value: 1.2948  
Avg Mol Weight: 19.4551  
Avg CuPt/Gal: 57.1122  
26 Lb Product: 0.4332  
Methane+ GPM: 17.1358  
Ethane+ GPM: 2.5647  
Propane+ GPM: 1.0538  
Butane+ GPM: 0.5225  
Pentane+ GPM: 0.2769

REMARKS:

Approved by: DON ROEMER

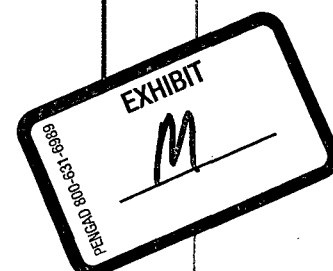
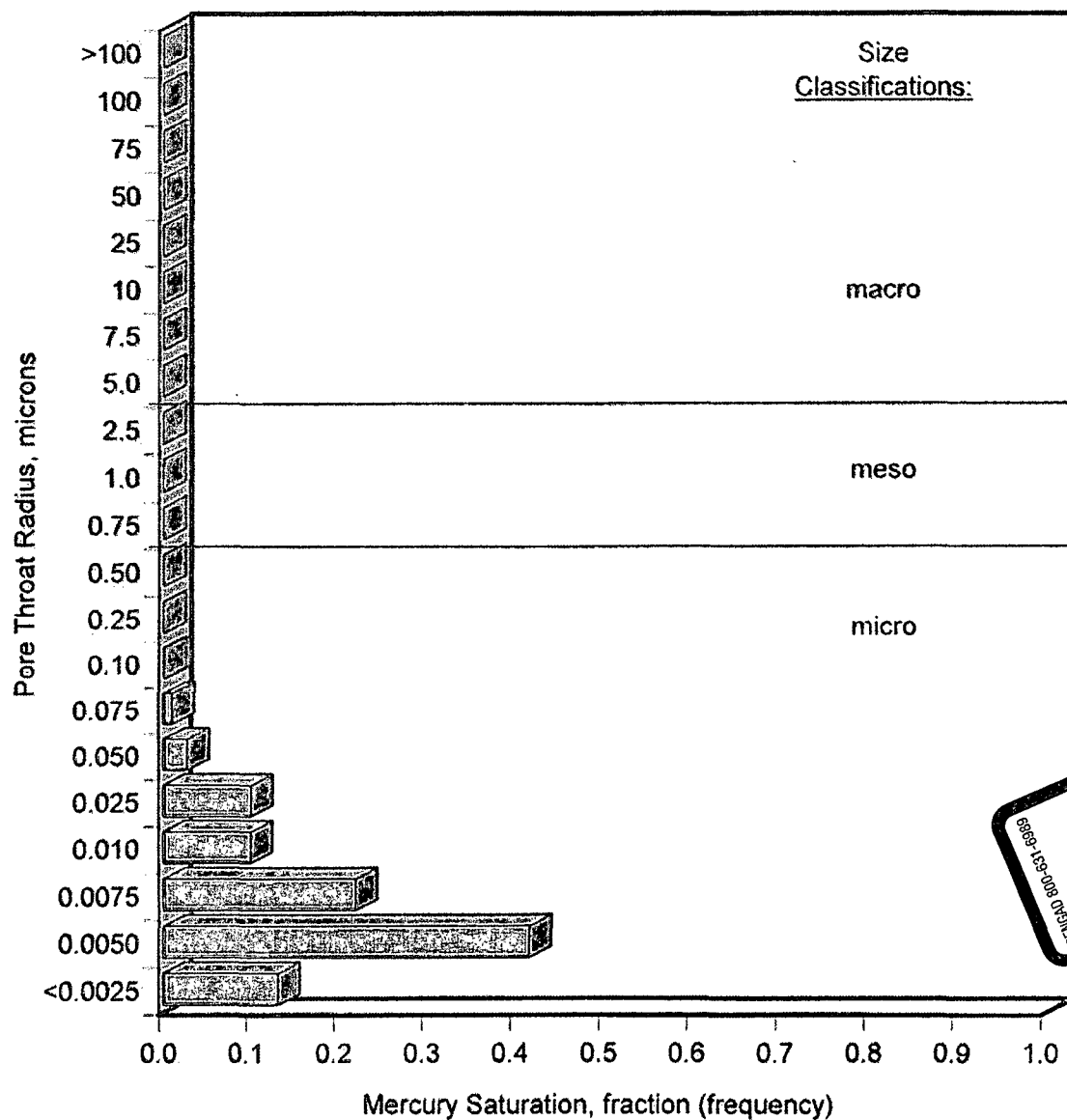
Wed Dec 13 10:13:35 2006



Company: Bold Energy  
 Well: Delilah State No. 1  
 Field: Runyan Ranch  
 Formation: Wolfcamp  
 Location: Eddy County, New Mexico  
 File: HOU-060947

Sample:	6Bm	un-stressed	Host Plug	
Depth, feet:	4385.60		na	na
Klinkenberg Permeability, md:		0.005	-	-
Permeability to Air, md:		0.019	-	-
Swanson Permeability, md:		0.00001	-	-
Porosity, fraction:		0.013	-	-
maximum Sb/Pc, fraction:		0.00003		
R35, microns:		0.00583		
R50 (median pore throat radius):		0.00469		

## PORE THROAT SIZE HISTOGRAM





**KELLAHIN & KELLAHIN**  
**Attorney at Law**

**W. THOMAS KELLAHIN**  
**706 GONZALES ROAD**  
**SANTA FE, NEW MEXICO 87501**

**TELEPHONE 505-982-4285**  
**FACSIMILE 505-982-2047**  
**TKELLAHIN@COMCAST.NET**

August 17, 2007

**HAND DELIVERED**

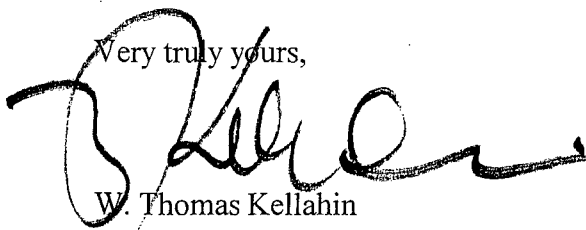
Mr. Mark Fesmire, P.E., Director  
Oil Conservation Division  
1220 South Saint Francis Drive  
Santa Fe, New Mexico 87505

Re: Administrative Application of Parallel Petroleum Corporation  
for authorization to simultaneously dedicate  
a standard gas spacing and proration unit in the  
Wolfcamp formation to two horizontal wellbores,  
including an exception to the well density requirement  
of Division Rule 104.D, Chaves County, New Mexico  
S/2 Section 16, T15S, R25E  
Swale 1525-16 State Well No. 1 and 2

Dear Ms. Fesmire:

On behalf of Parallel Petroleum Corporation, please find enclosed our  
referenced administrative application.

Very truly yours,



W. Thomas Kellahin

cc: Parallel Petroleum Corporation  
Attn: Mike Gray

RECEIVED  
2007 AUG 17 PM 12:48

ABOVE THIS LINE FOR DIVISION USE ONLY

# NEW MEXICO OIL CONSERVATION DIVISION

- Engineering Bureau -

1220 South St. Francis Drive, Santa Fe, NM 87505



## ADMINISTRATIVE APPLICATION CHECKLIST

THIS CHECKLIST IS MANDATORY FOR ALL ADMINISTRATIVE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND REGULATIONS WHICH REQUIRE PROCESSING AT THE DIVISION LEVEL IN SANTA FE

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U.S. Bureau of Land Management - Commissioner of Public Lands, State Land Office

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Note: Statement must be completed by an individual with managerial and/or supervisory capacity.

**Kellahin & Kellahin**  
**Attorneys At Law**

706 Gonzales Rd.  
 Santa Fe, NM 87501

8/12/07  
 Date

Print or Type Name

Signature

Title

Date

TKellahin@cox.net

Address



**STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
OIL CONSERVATION DIVISION**

**IN THE MATTER OF THE ADMINISTRATIVE APPLICATION  
OF PARALLEL PETROLEUM CORPORATION FOR  
AUTHORIZATION TO SIMULTANEOUSLY DEDICATED  
A STANDARD SPACING AND PRORATION UNIT IN THE  
WOLFCAMP FORMATION TO TWO HORIZONTAL WELLS  
INCLUDING AN EXEMPTION TO THE WELL DENSITY  
REQUIREMENT OF RULE 104.D,  
CHAVES COUNTY, NEW MEXICO.**

ADMINISTRATIVE APPLICATION

Parallel Petroleum Corporation ("Parallel") by its attorneys, Kellahin & Kellahin, seeks approval to simultaneously dedicate a standard gas spacing and proration unit in the Wolfcamp formation to two horizontal wellbores including an exemption to the well density requirements of Rule 104.D, Chaves County, New Mexico. Applicant seeks authorization to dedicate a standard 320-acre spacing and proration unit comprised of the S/2 of Section 16, Township 15 South, Range 25East, Chaves County, New Mexico in the Wolfcamp formation to the following two wells:

(a) The Swale 1525-16 State Well No 2 (API #3000563924) to be drilled at an unorthodox surface location 760 feet FSL and 190 feet FWL (Unit M) and then to penetrate the Wolfcamp formation within the standard producing area window at a standard subsurface location approximately 660 feet FWL and 760 feet FSL (Unit M) and then drilled horizontally in an easterly direction staying within the producing area not less than 660 feet from each of the end and side boundaries of this spacing unit and ending at a standard bottom hole location 760 feet FSL and 660 feet FEL

(b) The Swale 1525-16 State Well No. 1 (API #3000563886) that has been drilled at an unorthodox surface location 1880 feet FSL and 208 feet FWL (Unit L) and penetrated the Wolfcamp formation within the standard producing area window at a standard subsurface location approximately 660 feet FWL and 660 feet FSL (Unit L) and then was drilled horizontally in an easterly direction staying within the producing area not less than 660 feet from each of the end and side boundaries of this spacing unit and ending at a standard bottom hole location 1880 feet FSL and 660 feet FEL

In support of its application, Parallel states:

- (1) Parallel is the current operator of the Swale 1525-16 State Well No. 1 (API #3000563886) that has been drilled and completed as a horizontal well in the N/2S/2 of Section 16, T15S, R25E. **See Exhibit "A" attached**
- (2) Parallel has obtained approval of its APD to drill second horizontal well in the S/2S/2 of Section 16, T15S, R25E being the Swale 1525-16 Well No. 2 (API #3000563924). **See Exhibit "B" attached**
- (3) Division Rule 111 provides for the rules and regulations of the drilling of directional wells and by definition includes "horizontal" wells but apparently does not limited the number of horizontal wells that can be drilled within a Project Area. Instead Rule 111 refers to a project area "that is enclosed by the outer boundaries of a spacing unit or a combination of complete spacing units," and incorporates by reference Rule 104 to define a "spacing unit"
- (4) Division Rule 104.C (2) allows two wells in a 320-acre spacing unit with each well located in a different 160-tract of the 320-acre spacing unit. This rule appears not to specifically address horizontal wells.
- (5) Division Rule 104.D (3) States: "number of wells per spacing unit. Exceptions to the provisions of statewide rules or special pool orders concerning the number of wells allowed per spacing unit may be permitted by the Director only after notice and opportunity for hearing. Notice shall be given to those "affected parsons" defined by Rule 1207.A (2)."
- (6) The Division Legal Examiner, David K. Brooks, has advised the notice for this type of case, "affected parties" are: (a) all each operator of an adjoining and offsetting 320-acre drilled or undrilled spacing units (direct or diagonal offsets) (b) if undrilled, then to the working interest owners and unleased mineral owners, (c) if applicant is also the offsetting operator, then to its working interest owners, (d) if applicant is the offsetting operator and the only working interest owners, then to its lessors, (e) if the offsetting section has no spacing unit, then the applicant and presume the orientation closest to the subject spacing unit.

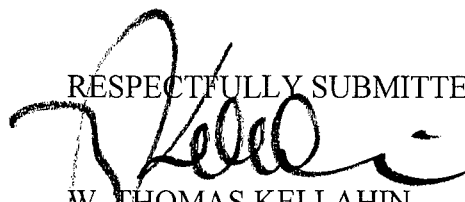


- (7) Parallel has provided written notice of hearing to all “affected parties, including those listed on the attached located map and index. **Exhibit “C”** and the notice letter attached **as Exhibit “D”**
- (8) Parallel’s enclosed exhibits demonstrate that because of the low permeability of the Wolfcamp formation in this area:
- a. the actual area being depleted by the first horizontal well is generally limited to the north half of this spacing unit, being the N/2S/4 of Section 16, and it not effectively recovery either the gas underlying the S/2 of Section 16 or adversely affecting the correlative rights of the offsetting interest owners.
  - b. A second horizontal well is needed by the south half of this spacing unit, being the S/2S/2 of Section 16, in order to provide a opportunity to recovery gas that might otherwise not be recovered under the S/2 of Section 16 and in doing so will not adversely affect the correlative rights of the offsetting interest owners.
- (9) Exhibit “E” is a written summary prepare by Parallel’s petroleum geologist and petroleum engineer with supporting exhibits:
- (a) paleogeography of the Permian basin---see Exhibit “F”
  - (b) NW shelf stratigraphic chart---see Exhibit G
  - (c) Cross Section & Trap Diagram---see Exhibit H
  - (d) Alysheba No. 1-Map View—see Exhibit I
  - (e) Alysheba No. Stage 2-Map View—Exhibit J
  - (f) Conclusions—Exhibit K
  - (g) Gas Analysis from Foreso 152506 State E-1 well,see Exhibit L
  - (h) Pore Throat Size Histogram—see Exhibit M
  - (i) Three well cross-section (Large display)—see Exhibit N
- (10) These exhibit are basically the same data presented to the Division’s at a meeting on February 13, 2007 attended by members of the industry and the Division Chief Engineer, Richard Ezeanyim, and Division’s attorney, David K. Brooks.
- (11) Approval of this application will not impair the correlative rights of any other interest owner in the area and will afford Parallel the opportunity to utilize two horizontal wells to produce the Wolfcamp formation gas reserves from this GPU.

(12) Approval of this application will be in the best interests of conversations, the prevention of waste and the protection of correlative rights.

WHEREFORE, Parallel Petroleum Corporation requests that this the Oil Conservation Division enter its order granting an exception to the well density requirements of Rule 104.B and authorize the simultaneous dedication of two horizontal wells within this spacing unit.

RESPECTFULLY SUBMITTED:

A handwritten signature in black ink, appearing to read 'W. Thomas Kellahin', written over the printed name.

W. THOMAS KELLAHIN  
KELLAHIN & KELLAHIN  
706 Gonzales Road  
Santa Fe, New Mexico 87501  
(505) 982-4285

DISTRICT I  
1625 N. French Dr., Hobbs, NM 88240

DISTRICT II  
1901 W. Grand Avenue, Artesia, NM 88210

DISTRICT III  
1000 Rio Brazos Rd., Artesia, NM 87410

DISTRICT IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico  
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION  
1220 South St. Francis  
Santa Fe, NM 87505

Form C-102  
Revised October 12, 2005  
Submit to Appropriate District Office  
State Lease - 4 Copies  
Fee Lease - 3 Copies

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code 97489	Pool Name Wildcat, Wolfcamp
Property Code	Property Name SWALE 1525-16 STATE	Well Number 1
OGRID No.	Operator Name PARALLEL PETROLEUM CORPORATION	Elevation 3501'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
L	16	15 S	25 E		1880'	SOUTH	208'	WEST	CHAVES

Bottom Hole Location If Different From Surface

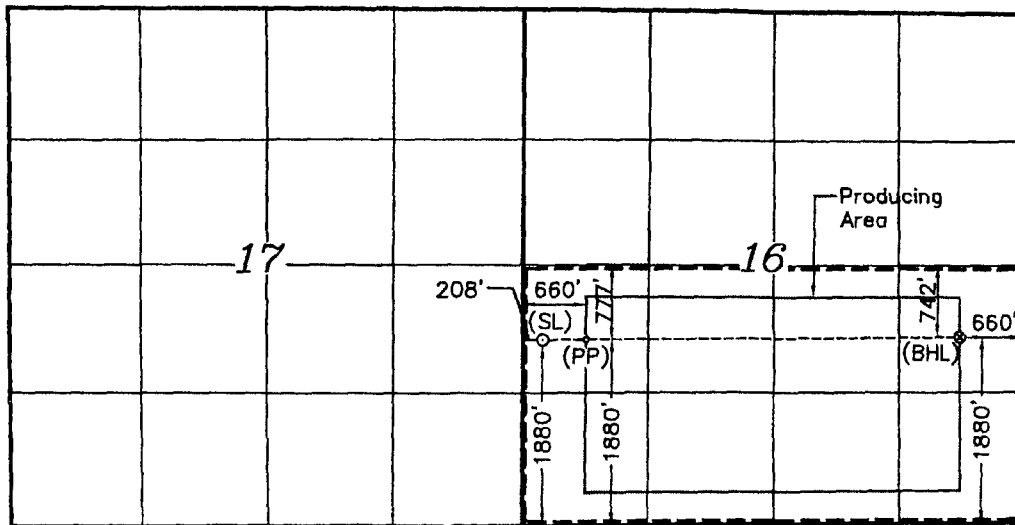
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
I	16	15 S	25 E		1880'	SOUTH	660'	EAST	CHAVES

Dedicated Acres 320	Joint or Infill	Consolidation Code	Order No.
------------------------	-----------------	--------------------	-----------

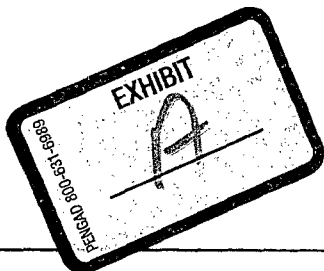
NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

NOTE:

- 1) Plane Coordinates shown hereon are Transverse Mercator Grid and Conform to the "New Mexico Coordinate System", New Mexico East Zone, North American Datum of 1927. Distances shown hereon are mean horizontal surface values.



Project Area



Coordinate Table	
Description	Plane Coordinate
Swale 1525-16 State #1	X = 462,579.7
Surface Location	Y = 732,271.0
Swale 1525-16 State #1	X = 463,031.5
Penetration Point	Y = 732,276.2
Swale 1525-16 State #1	X = 466,997.4
Bottom Hole Location	Y = 732,322.7

OPERATOR CERTIFICATION

I hereby certify the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or undivided mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature: *Gay E. Miller*  
Date: 12-27-06  
Printed Name: *Agent, Parallel Petroleum Company*

SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision and that the same is true and correct to the best of my belief.

October 12, 2006

Date of Survey  
Signature & Seal of Professional Surveyor KMT

*W.O. Num. 2006-1002*

W.O. Num. 2006-1002

Certificate No. MACON McDONALD 12185

DISTRICT I  
1621 N. French Dr., Hobbs, NM 88240

DISTRICT II  
1301 W. Grand Avenue, Artesia, NM 88210

DISTRICT III  
1000 Rio Brazos Rd., Aztec, NM 87410

DISTRICT IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505

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State Lease - 4 Copies  
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☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code 97489	Pool Name Wildcat; Wolfcamp
Property Code	Property Name SWALE 1525-16 STATE	Well Number 2
OGRID No.	Operator Name PARALLEL PETROLEUM CORPORATION	Elevation 3498'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	16	15 S	25 E		760	SOUTH	190	WEST	CHAVES

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	16	15 S	25 E		760	SOUTH	660	EAST	CHAVES

Dedicated Acres 320	Joint or Infill	Consolidation Code	Order No.
------------------------	-----------------	--------------------	-----------

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EXHIBIT  
B

88861-630-008 ORIGINAL

Description	Plane Coordinate
Swale 1525-16 State #2	X = 482,659.1
Surface Location	Y = 731,150.6
Swale 1525-16 State #2	X = 483,028.6
Penetration Point	Y = 731,156.3
Swale 1525-16 State #2	X = 487,004.5
Bottom Hole Location	Y = 731,203.0

Project Area

Producing Area

190'  
660'  
760'

(PP)  
(SL)  
(BHL)

660'

OPERATOR CERTIFICATION

I hereby certify the the information contained herein is true and complete to the best of my knowledge and belief, and that this organization, either owns a working interest or undivided mineral interests in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a secondary pooling agreement or a compulsory pooling order heretofore entered by the division.

*Deane Durham* 4-9-07  
Signature Date  
Deane Durham  
Printed Name

SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision and that the same is true and correct to the best of my belief.

October 12, 2006  
Date of Survey  
Signature & Seal of Professional Surveyor  
KMT  
W.O. Num. 2006-1003  
Certificate No. WACON McDONALD 12185

[illegible]



**Parallel Petroleum Corporation's Notice List  
For Swale 1525-16 State Com Wells No. 1 and 2**

Tract 1: N/2 of Sec 15 (Undrilled)

- (a) Parallel and
- (b) Capstone Oil & Gas Company, L.P.
- (c) CMW Interests, Inc.

Tract 2: S/2 of Sec 15 (Undrilled)

- (a) Parallel and
- (b) Capstone Oil & Gas Company, L.P.

Tract 3: N/2 of Sec 16 (Undrilled)

- (a) Parallel and
- (b) Capstone Oil & Gas Company, L.P.

Tract 4: N/2 of Sec 17 (Undrilled)

- (a) Parallel and
- (b) Capstone Oil & Gas Company, L.P.
- (d) CMW Interests, Inc. (W/2E/2)
- (e) Egler Exploration, Inc. (W/2E/2)

Tract 5: S/2 of Sec 17 (Drilled)

- (a) Parallel and
- (b) Capstone Oil & Gas Company, L.P.
- (c) CMW Interests, Inc. (W/2E/2)
- (d) Egler Exploration, Inc. (W/2E/2)

Tract 6: N/2 of Sec 20 (Undrilled)

- (a) Parallel and
- (b) Capstone Oil & Gas Company, L.P.

Tract 7: N/2 of Sec 21 (Undrilled)

- a) Parallel and
- (b) Capstone Oil & Gas Company, L.P.

Tracts 8: N/2 of Sec 22 (Undrilled)

- (a) Parallel and
- (b) Capstone Oil & Gas Company, L.P.
- (c) CMW Interests, Inc. (E/2NE/4)
- (d) Elger Exploration, Inc. (E/2NE/4)
- (e) Unleased mineral interest owners:
  - a. A. Gayle Hudgens. a single woman  
P.O. Box 25561  
Dallas, TX 75225

- b. Sacramento Partners Limited Partnership  
105 South Fourth Street  
Artesia. NM 88210
- c. Spiral, Inc.  
P.O. Box 1933  
(address)
- e. Sharbro Oil Ltd. Co.  
P.O. Box 829  
Artesia, NM 88211
- f. Southwest Resources, Inc.  
1111 West Country Club Road  
Roswell, NM 88201
- g. Lobos Energy Partners, LLC  
3817 NW Expressway, Suite 950  
Oklahoma City, OK 73112
- h. Estate of W. E. Flint, dec.  
Dona Ana County, NM PC #5171  
Elaine B. Flint, widow and exec.  
2125 Thomas Dr.  
Las Cruces, NM 88001
- i. Margaret Louise Doyle & John Steven Doyle,  
3747 - 66 Campana South  
Oceanside, CA 92054
- j. Martin Yates III  
c/o Myco Industries, Inc. P. o. Box 840  
Artesia NM 88211

**KELLAHIN & KELLAHIN**  
**Attorney at Law**

**W. THOMAS KELLAHIN**  
**706 GONZALES ROAD**  
**SANTA FE, NEW MEXICO 87501**

**TELEPHONE 505-982-4285**  
**FACSIMILE 505-982-2047**  
**TKELLAHIN@COMCAST.NET**

August 17, 2007

**CERTIFIED MAIL-RETURN RECEIPT REQUESTED**

**NOTICE OF THE FOLLOWING NEW MEXICO OIL CONSERVATION  
DIVISION ADMINISTRATIVE CASE:**

*OFFSETTING INTEREST OWNERS:*

**Re:** Administrative Application of Parallel Petroleum Corporation  
for authorization to simultaneously dedicate  
a standard gas spacing and proration unit in the  
Wolfcamp formation to two horizontal wellbores,  
including an exemption to the well density requirements  
of Rule 104.D, Chaves County, New Mexico

Dear interest owner:

On behalf of Parallel Petroleum Corporation please find enclosed a copy of  
its referenced administrative application. This notice is based upon records that  
indicate that you have an interest in adjoining and offsetting tracts and are parties  
affected by this application

If you have no objection, then there is nothing for you to do. If you are  
willing to waive objection, please sign this letter as indicated and return it to me.  
However, should you have any objection to the Division approving this  
application, then it will be necessary for you to file a written objection with the  
New Mexico Oil Conservation Division, 1220 South Saint Francis Drive, Santa  
Fe, New Mexico 87505 within twenty (20) days of the date of this letter. Failure  
to file a timely objection will preclude you from objecting at a later date.

Very truly yours,

  
W. Thomas Kellahin

**WAIVER OF OBJECTION:**

By: \_\_\_\_\_ with authority for  
and on behalf of \_\_\_\_\_  
Date: \_\_\_\_\_



**Wolfcamp Reservoir Development**  
**Section 16, T15S, R25E**  
**Chaves Co., New Mexico**  
**Case # 13965**

This Wolfcamp gas reservoir is interpreted as the sabkha shelf model along the Northwest carbonate platform. The Wolfcamp reservoir is contained within the restricted lagoon-platform facies belt where dolomitization and fracturing has occurred to enhance the porosity and in deep enough water so that evaporates are not prevalent to occlude porosity. Up-dip, north to northwest of the reservoir are terrestrial deposits which do include evaporates that cement the porosity and act as a seal for the Wolfcamp stratigraphic trap. Down-dip, south to southeast, of the dolomitized Wolfcamp reservoir facies belt are tight limestones that do not contain the reservoir development.

There are three alternating depositional cycles. The matrix porosity is comprised of a dolomitized fusulinid wackestone-packstone overlain by a burrowed lime mud overlain by a lagoonal shale which is the maximum flooding event. The reservoir also contains natural fractures. The principal maximum stress direction is predominantly north-south. The formation dips to the east-southeast at 1 degree. The average gross thickness of the Wolfcamp varies from 25'-50' with an average net thickness of a few feet to 25' and an average porosity less than 8%.

Planned spacing between horizontal laterals in the south-half of section 16 is 1160'.

The Swale 1525-16 State #1 has been drilled in the north-half of the south-half and actual footages for the penetration point and total depth within the Wolfcamp pay are:

Surface Location @ 1880' FSL and 208' FWL, Section 16, T15S, R25E

Penetration Point @ 5183' measured depth, 1850' FSL and 751' FWL

Bottom-Hole Location @ 8924' measured depth, 1906' FSL and 790' FEL

Perforations are from top perf at 5290' measured depth to bottom perf at 8822' measured depth.

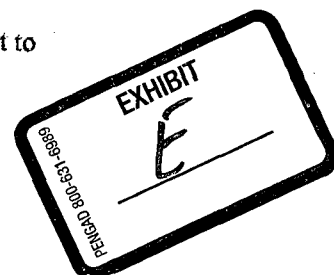
The Swale 1525-16 State #2 will be in the south-half of the south-half, and planned surface, penetration point and total depth are:

Surface Location @ 760' FSL and 190' FWL, Section 16, T15S, R25E

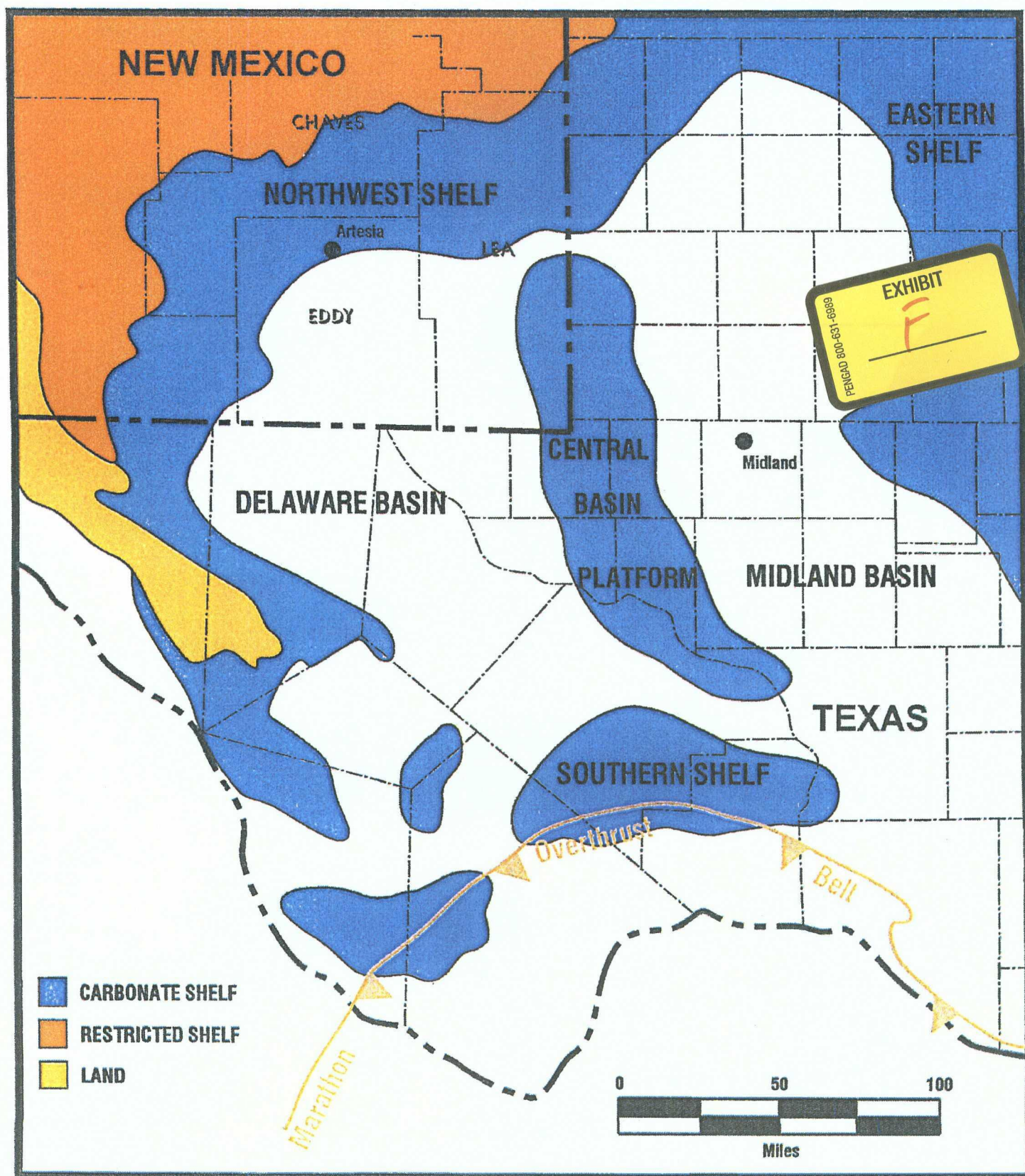
Penetration Point @ 760' FSL and 660' FWL, Bottom-Hole Location @ 760' FSL and 660' FEL

Recommended fracture half-lengths for this formation in the area are 1,100' in order to drain 160 acres. This would require 4 horizontal wells in parallel to drain a 640-acre section. This 1,100' fractured half-length yields an approximate proppant-fractured half-length of 500-600' and an effective producible half-length of 300-400'. Microseismic monitoring data from wells in the area fractured using Parallel Petroleum's preferred stimulation method show a fractured half-length of 900' and therefore the estimated producible half-length estimate is shorter than the recommended 300-400'. An optimistic estimate of 300' producible half-length of both the Swale #1 and the Swale #2 would create an unproductive interval along the length of and between the laterals of 560'.

In conclusion, given: low permeability of the dolomite (< .01 - .02 md), small net pay interval (< 20' in section 16) and low porosity of the interval (< 3% - 9% - ~ 7% in section 16), the Wolfcamp formation should be produced using 2 parallel horizontal wells per 320-acre unit to efficiently drain the unit.



# WOLFCAMPIAN (PERMIAN) PALEOGEOGRAPHY OF THE PERMIAN BASIN





# Northwest Shelf Stratigraphic Chart

Age		Unit Name	HC's	Approx. Depth
Permian 289-248 MYA	Ochoan	Rustler		Top Reservoir ~5000-5500'
		Salado		
	Guadalupian	Tansill		
		Eumont Yates	☉ ☀	
		Seven Rivers	☉ ☀	
		Queen	☉ ☀	
		Grayburg	☉ ☀	
		San Andres	☉	
		Glorieta	☉	
	Leonardian	Yeso	☉ ☀	
		Abo	☉ ☀	
	Wolfcampian	Wolfcamp	☉ ☀	
Pennsylvanian 289-320 MYA		Cisco		
		Canyon		
		Strawn	☉ ☀	
		Atoka	☀	
		Morrow	☉ ☀	
Mississippian 320-363 MYA		Miss. Lime	☉ ☀	
		Woodford		
Devonian 409-363 MYA		Devonian	☀	
Silurian 439-409 MYA		U. Silurian		
		Fusselman	☉	
Ordovician 510-439 MYA	Simpson	Montoya	☉	
		McKee	☉ ☀	
		Waddell		
		Connell		
		Joins		
		Ellenburger	☀	
Cambrian 510-570 MYA				
Pre-Cambrian >570 MYA				

## LEGEND



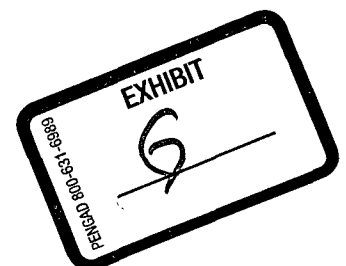
Current Active Plays



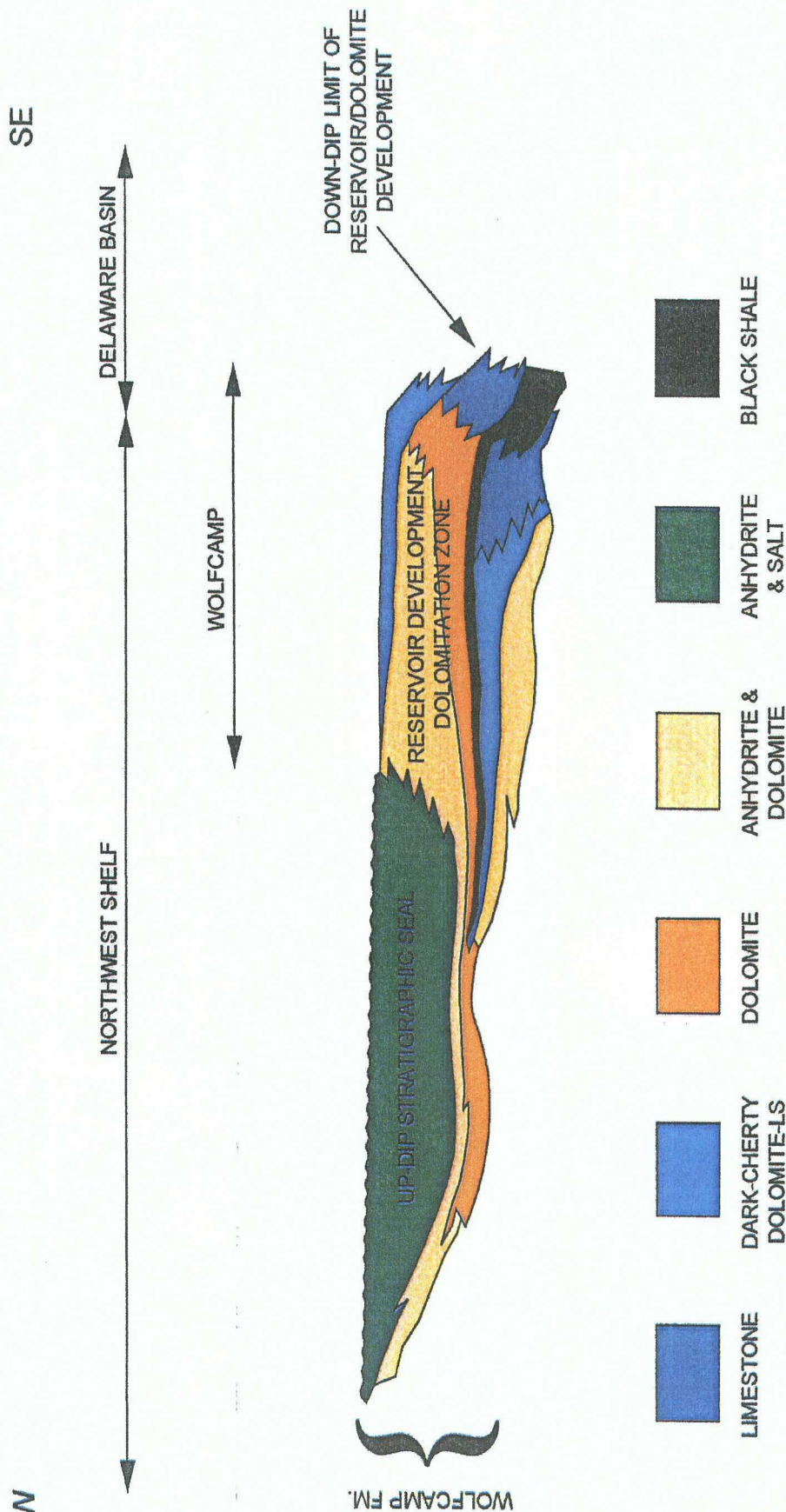
Oil Producing Zones



Gas Producing Zones



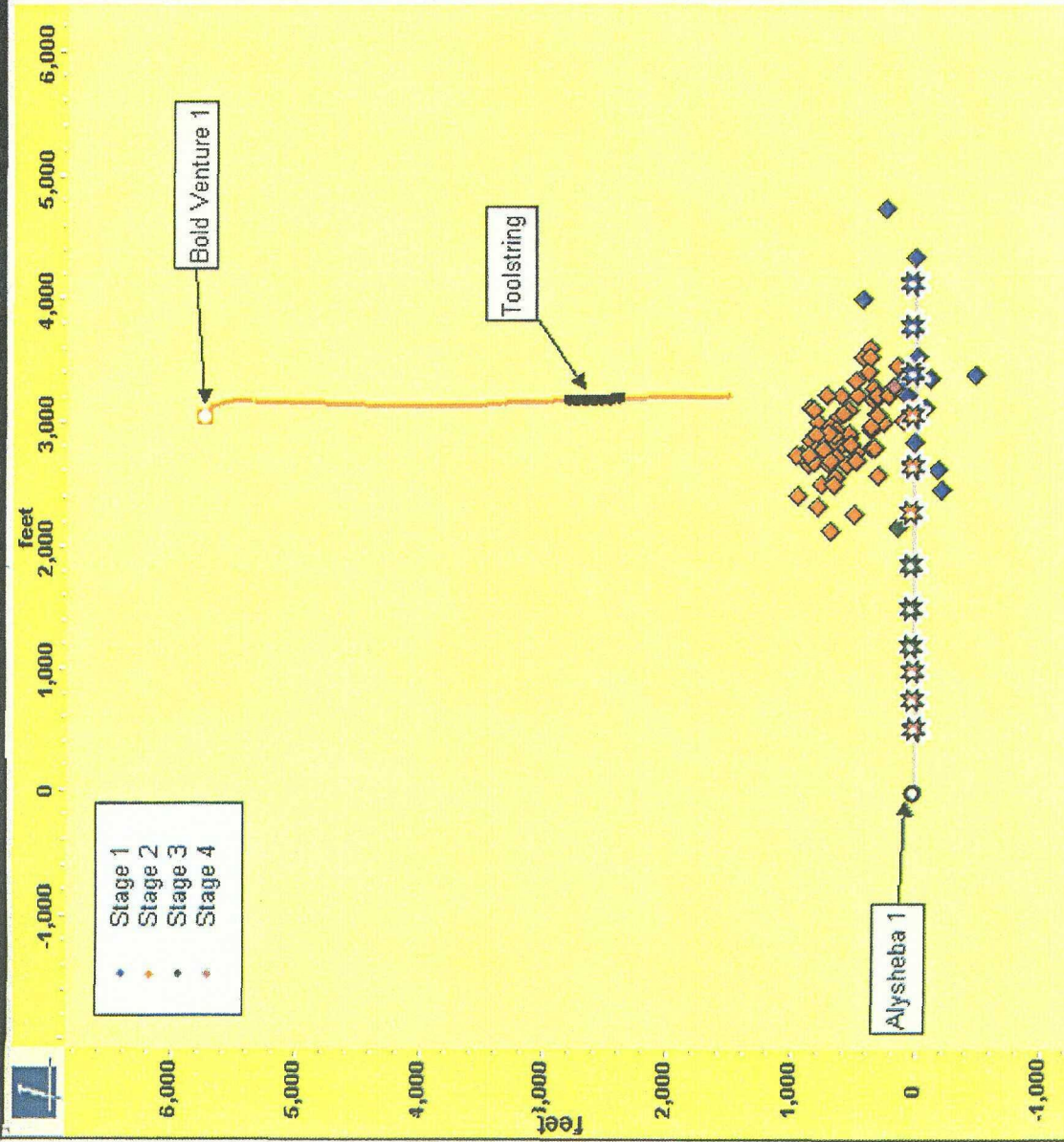
# CROSS SECTION & TRAP DIAGRAM



Northwest-southeast cross section across the Northwest Shelf/Delaware Basin transition. Rock types are differentiated illustrating the trap developed within the Wolfcamp reservoir. The pervasive evaporite deposits in the northwest act as a stratigraphic seal for the dolomitized reservoir developed down-dip. Further down structure the reservoir is limited by the lack of dolomite within tighter limestone and shale deposits.



# Alysheba No. 1 – Map View



- Fracture Azimuths: Difficult to determine, possibly N-S.
- Fracture Half-Lengths: ~900' (measured North from wellbore)
- Most of the microseismic events were recorded during Stage 2. Only one event was detected during both Stages 3 and 4.
- Unclear why Stage 2 produced the majority of the events; perhaps interaction with faulting or fracture swarm near wellbore?



# Alysheba No. 1 Stage 2 - Map View

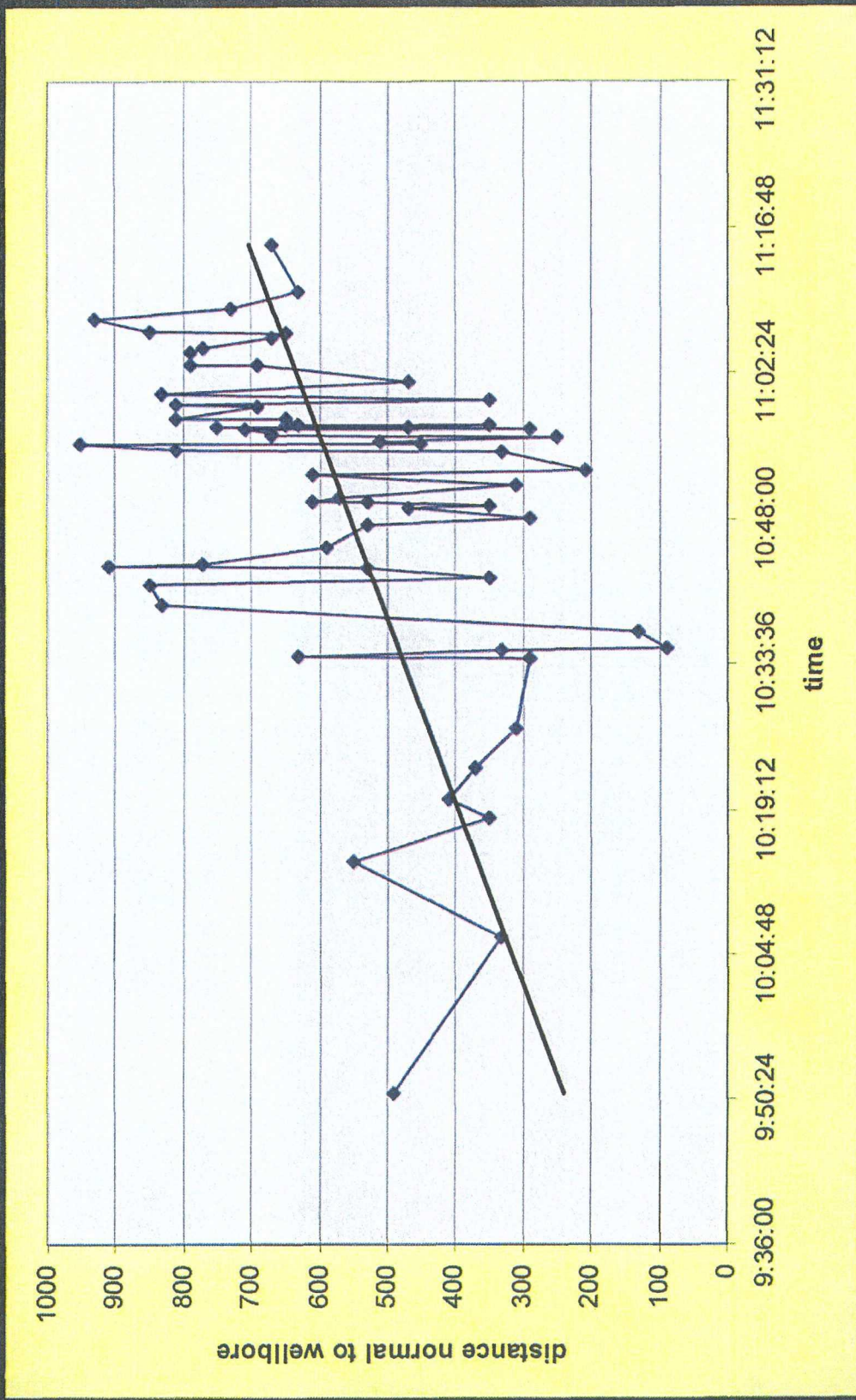


EXHIBIT  
J  
PENGAD 800-631-6989

Pinnacle



## Conclusions

- Azimuth uncertain, but has a strong N-S component
- Possibility of a N35°E secondary component
- 250 ft of height
- 900 ft of half-length, longer than Seabiscuit, but still shorter than competitors
- Low degree of complexity
- Higher pressures may not be related to oblique initiation (all stages lack of tortuosity, presence of perf friction)





Wildcat Measurement Service  
P.O. Box 1836  
Artesia, New Mexico 88211-1836  
TollFree #888-421-9453  
Office #505-746-3481  
"Quality and Service is our First Concern"

PDS 06/25/00

Run No. 261213-02  
Date Run 12/13/2006  
Date Sampled 12/09/2006

Analysis for: PARALLEL PETROLEUM CORPORATION  
Well Name: FORESO 1525-16 STATE "B" #1

GPANGL.162

Field:  
Sta. Number:  
Purpose: SPOT  
Sampling Temp: 22.0 DEG F  
Volume/day: 1925 MCF/DAY  
Pressure on Cylinder: 60.0 PSIG

Producer: PARALLEL PETROLEUM CORP.  
County: CHAVES State: NM  
Sampled By: A.J.G.  
Atmos Temp: DEG F  
Formation:  
Line Pressure: 73.2 PSIA

GAS COMPONENT ANALYSIS

		Mol %	GPM
Carbon Dioxide	CO2	4.3235	
Nitrogen	N2	0.6738	
Methane	C1	85.9676	
Ethane	C2	5.6524	1.5108
Propane	C3	1.9299	0.5314
Iso-Butane	IC4	0.2812	0.0920
Nor-Butane	NC4	0.4872	0.1536
Iso-Pentane	IC5	0.1606	0.0588
Nor-Pentane	NC5	0.1404	0.0508
Hexanes Plus	C6+	0.3834	0.1673
TOTAL		100.0000	2.5647

Pressure Base: 14.7300  
Real BTU Dry: 1078.92  
Real BYD Wet: 1060.14  
Real Calc. Specific Gravity: 0.6732  
Field Specific Gravity: 0.0000

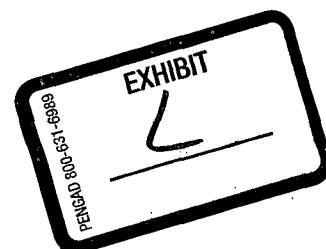
Standard Pressure: 14.6960  
BTU Dry: 1073.62  
BTU Wet: 1054.94

Z Factor: 0.9974  
N Value: 1.2948  
Avg Mol Weight: 19.4551  
Avg CuPt/Gal: 57.1122  
26 Lb Product: 0.4332  
Methane+ GPM: 17.1358  
Ethane+ GPM: 2.5647  
Propane+ GPM: 1.0538  
Butane+ GPM: 0.5225  
Pentane+ GPM: 0.2769

REMARKS:

Approved by: DON HOBMAN

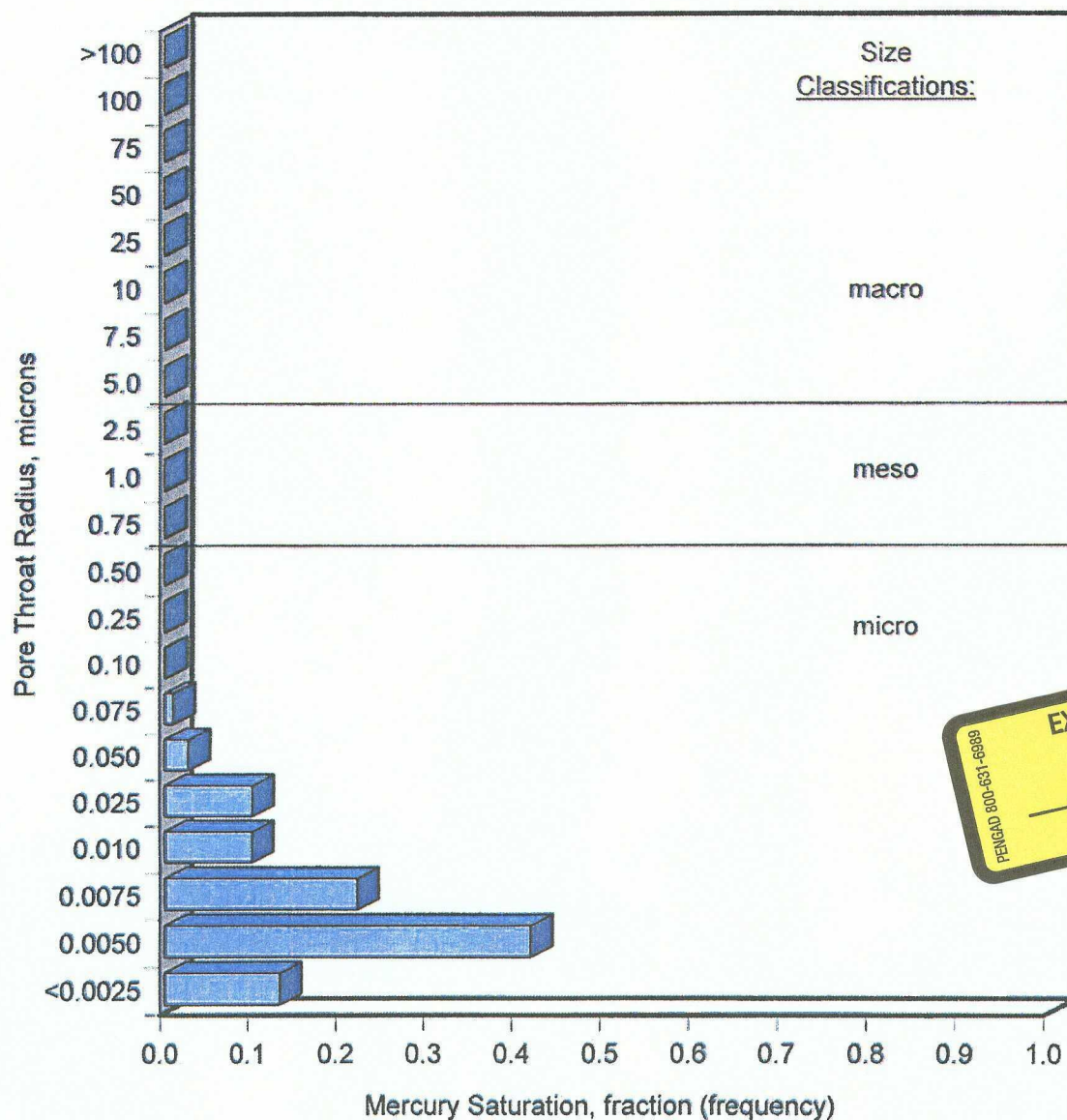
Wed Dec 13 10:13:35 2006



Company: Bold Energy  
 Well: Delilah State No. 1  
 Field: Runyan Ranch  
 Formation: Wolfcamp  
 Location: Eddy County, New Mexico  
 File: HOU-060947

<b>Sample:</b>	<b>6Bm</b>	un-	Host Plug	
Depth, feet:	4385.60	stressed	na	na
Klinkenberg Permeability, md:	0.005		-	-
Permeability to Air, md:	0.019		-	-
Swanson Permeability, md:	0.00001		-	-
Porosity, fraction:	0.013		-	-
maximum Sb/Pc, fraction:	0.00003			
R35, microns:	0.00583			
R50 (median pore throat radius):	0.00469			

## PORE THROAT SIZE HISTOGRAM



**KELLAHIN & KELLAHIN**  
**Attorney at Law**

**W. THOMAS KELLAHIN**  
**706 GONZALES ROAD**  
**SANTA FE, NEW MEXICO 87501**

**TELEPHONE 505-982-4285**  
**FACSIMILE 505-982-2047**  
**TKELLAHIN@COMCAST.NET**

August 17, 2007

**HAND DELIVERED**

Mr. Mark Fesmire, P.E., Director  
Oil Conservation Division  
1220 South Saint Francis Drive  
Santa Fe, New Mexico 87505

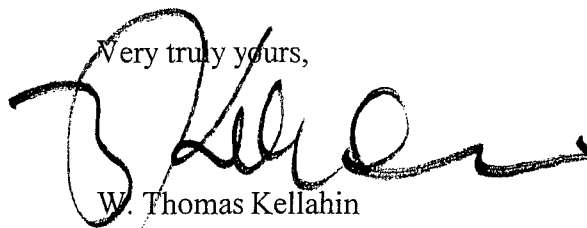
Re: Administrative Application of Parallel Petroleum Corporation  
for authorization to simultaneously dedicate  
a standard gas spacing and proration unit in the  
Wolfcamp formation to two horizontal wellbores,  
including an exception to the well density requirement  
of Division Rule 104.D, Chaves County, New Mexico  
S/2 Section 16, T15S, R25E  
Swale 1525-16 State Well No. 1 and 2

RECEIVED  
2007 AUG 17 PM 12:48

Dear Ms. Fesmire:

On behalf of Parallel Petroleum Corporation, please find enclosed our  
referenced administrative application.

Very truly yours,



W. Thomas Kellahin

cc: Parallel Petroleum Corporation  
Attn: Mike Gray



ABOVE THIS LINE FOR DIVISION USE ONLY

**NEW MEXICO OIL CONSERVATION DIVISION**  
**- Engineering Bureau -**  
 1220 South St. Francis Drive, Santa Fe, NM 87505



**ADMINISTRATIVE APPLICATION CHECKLIST**

THIS CHECKLIST IS MANDATORY FOR ALL ADMINISTRATIVE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND REGULATIONS WHICH REQUIRE PROCESSING AT THE DIVISION LEVEL IN SANTA FE

**Application Acronyms:**

**[NSL-Non-Standard Location] [NSP-Non-Standard Proration Unit] [SD-Simultaneous Dedication]**  
**[DHC-Downhole Commingling] [CTB-Lease Commingling] [PLC-Pool/Lease Commingling]**  
**[PC-Pool Commingling] [OLS - Off-Lease Storage] [OLM-Off-Lease Measurement]**  
**[WFX-Waterflood Expansion] [PMX-Pressure Maintenance Expansion]**  
**[SWD-Salt Water Disposal] [IPI-Injection Pressure Increase]**  
**[EOR-Qualified Enhanced Oil Recovery Certification] [PPR-Positive Production Response]**

**[1] TYPE OF APPLICATION - Check Those Which Apply for [A]**

[A] Location - Spacing Unit - Simultaneous Dedication  
☐ NSL ☐ NSP ☒ SD

Check One Only for [B] or [C]

[B] Commingling - Storage - Measurement  
☐ DHC ☐ CTB ☐ PLC ☐ PC ☐ OLS ☐ OLM

[C] Injection - Disposal - Pressure Increase - Enhanced Oil Recovery  
☐ WFX ☐ PMX ☐ SWD ☐ IPI ☐ EOR ☐ PPR

[D] Other: Specify \_\_\_\_\_

**[2] NOTIFICATION REQUIRED TO: - Check Those Which Apply, or ☐ Does Not Apply**

[A] ☐ Working, Royalty or Overriding Royalty Interest Owners

[B] ☒ Offset Operators, Leaseholders or Surface Owner

[C] ☐ Application is One Which Requires Published Legal Notice

[D] ☐ Notification and/or Concurrent Approval by BLM or SLO  
U.S. Bureau of Land Management - Commissioner of Public Lands, State Land Office

[E] ☒ For all of the above, Proof of Notification or Publication is Attached, and/or,

[F] ☐ Waivers are Attached

**[3] SUBMIT ACCURATE AND COMPLETE INFORMATION REQUIRED TO PROCESS THE TYPE OF APPLICATION INDICATED ABOVE.**

**[4] CERTIFICATION:** I hereby certify that the information submitted with this application for administrative approval is **accurate** and **complete** to the best of my knowledge. I also understand that **no action** will be taken on this application until the required information and notifications are submitted to the Division.

Note: Statement must be completed by an individual with managerial and/or supervisory capacity.

*[Signature]*

Print or Type Name

Signature

**Kellahin & Kellahin**  
**Attorneys At Law**

**706 Gonzales Rd.**  
**Santa Fe, NM 87501**

*TKellahin@concept.net*

Address

**8/12/07**  
 Date

**STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
OIL CONSERVATION DIVISION**

**IN THE MATTER OF THE ADMINISTRATIVE APPLICATION  
OF PARALLEL PETROLEUM CORPORATION FOR  
AUTHORIZATION TO SIMULTANEOUSLY DEDICATED  
A STANDARD SPACING AND PRORATION UNIT IN THE  
WOLFCAMP FORMATION TO TWO HORIZONTAL WELLS  
INCLUDING AN EXEMPTION TO THE WELL DENSITY  
REQUIREMENT OF RULE 104.D,  
CHAVES COUNTY, NEW MEXICO.**

ADMINISTRATIVE APPLICATION

Parallel Petroleum Corporation ("Parallel") by its attorneys, Kellahin & Kellahin, seeks approval to simultaneously dedicate a standard gas spacing and proration unit in the Wolfcamp formation to two horizontal wellbores including an exemption to the well density requirements of Rule 104.D, Chaves County, New Mexico. Applicant seeks authorization to dedicate a standard 320-acre spacing and proration unit comprised of the S/2 of Section 16, Township 15 South, Range 25East, Chaves County, New Mexico in the Wolfcamp formation to the following two wells:

(a) The Swale 1525-16 State Well No 2 (API #3000563924) to be drilled at an unorthodox surface location 760 feet FSL and 190 feet FWL (Unit M) and then to penetrate the Wolfcamp formation within the standard producing area window at a standard subsurface location approximately 660 feet FWL and 760 feet FSL (Unit M) and then drilled horizontally in an easterly direction staying within the producing area not less than 660 feet from each of the end and side boundaries of this spacing unit and ending at a standard bottom hole location 760 feet FSL and 660 feet FEL

(b) The Swale 1525-16 State Well No. 1 (API #3000563886) that has been drilled at an unorthodox surface location 1880 feet FSL and 208 feet FWL (Unit L) and penetrated the Wolfcamp formation within the standard producing area window at a standard subsurface location approximately 660 feet FWL and 660 feet FSL (Unit L) and then was drilled horizontally in an easterly direction staying within the producing area not less than 660 feet from each of the end and side boundaries of this spacing unit and ending at a standard bottom hole location 1880 feet FSL and 660 feet FEL

In support of its application, Parallel states:

- (1) Parallel is the current operator of the Swale 1525-16 State Well No. 1 (API #3000563886) that has been drilled and completed as a horizontal well in the N/2S/2 of Section 16, T15S, R25E. **See Exhibit "A" attached**
- (2) Parallel has obtained approval of its APD to drill second horizontal well in the S/2S/2 of Section 16, T15S, R25E being the Swale 1525-16 Well No. 2 (API #3000563924). **See Exhibit "B" attached**
- (3) Division Rule 111 provides for the rules and regulations of the drilling of directional wells and by definition includes "horizontal" wells but apparently does not limited the number of horizontal wells that can be drilled within a Project Area. Instead Rule 111 refers to a project area "that is enclosed by the outer boundaries of a spacing unit or a combination of complete spacing units," and incorporates by reference Rule 104 to define a "spacing unit"
- (4) Division Rule 104.C (2) allows two wells in a 320-acre spacing unit with each well located in a different 160-tract of the 320-acre spacing unit. This rule appears not to specifically address horizontal wells.
- (5) Division Rule 104.D (3) States: "number of wells per spacing unit. Exceptions to the provisions of statewide rules or special pool orders concerning the number of wells allowed per spacing unit may be permitted by the Director only after notice and opportunity for hearing. Notice shall be given to those "affected parsons" defined by Rule 1207.A (2)."
- (6) The Division Legal Examiner, David K. Brooks, has advised the notice for this type of case, "affected parties" are: (a) all each operator of an adjoining and offsetting 320-acre drilled or undrilled spacing units (direct or diagonal offsets) (b) if undrilled, then to the working interest owners and unleased mineral owners, (c) if applicant is also the offsetting operator, then to its working interest owners, (d) if applicant is the offsetting operator and the only working interest owners, then to its lessors, (e) if the offsetting section has no spacing unit, then the applicant and presume the orientation closest to the subject spacing unit.

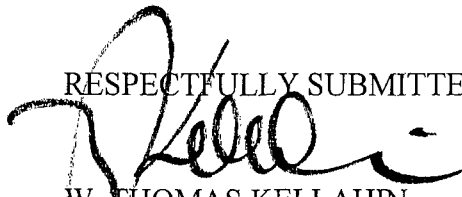
- (7) Parallel has provided written notice of hearing to all “affected parties, including those listed on the attached located map and index. **Exhibit “C”** and the notice letter attached **as Exhibit “D”**
- (8) Parallel’s enclosed exhibits demonstrate that because of the low permeability of the Wolfcamp formation in this area:
- a. the actual area being depleted by the first horizontal well is generally limited to the north half of this spacing unit, being the N/2S/4 of Section 16, and it not effectively recovery either the gas underlying the S/2 of Section 16 or adversely affecting the correlative rights of the offsetting interest owners.
  - b. A second horizontal well is needed by the south half of this spacing unit, being the S/2S/2 of Section 16, in order to provide a opportunity to recovery gas that might otherwise not be recovered under the S/2 of Section 16 and in doing so will not adversely affect the correlative rights of the offsetting interest owners.
- (9) Exhibit “E” is a written summary prepare by Parallel’s petroleum geologist and petroleum engineer with supporting exhibits:
- (a) paleogeography of the Permian basin---see Exhibit “F”
  - (b) NW shelf stratigraphic chart---see Exhibit G
  - (c) Cross Section & Trap Diagram---see Exhibit H
  - (d) Alysheba No. 1-Map View—see Exhibit I
  - (e) Alysheba No. Stage 2-Map View—Exhibit J
  - (f) Conclusions—Exhibit K
  - (g) Gas Analysis from Foreso 152506 State E-1 well,see Exhibit L
  - (h) Pore Throat Size Histogram—see Exhibit M
  - (i) Three well cross-section (Large display)—see Exhibit N
- (10) These exhibit are basically the same data presented to the Division’s at a meeting on February 13, 2007 attended by members of the industry and the Division Chief Engineer, Richard Ezeanyim, and Division’s attorney, David K. Brooks.
- (11) Approval of this application will not impair the correlative rights of any other interest owner in the area and will afford Parallel the opportunity to utilize two horizontal wells to produce the Wolfcamp formation gas reserves from this GPU.



(12) Approval of this application will be in the best interests of conversations, the prevention of waste and the protection of correlative rights.

WHEREFORE, Parallel Petroleum Corporation requests that this the Oil Conservation Division enter its order granting an exception to the well density requirements of Rule 104.B and authorize the simultaneous dedication of two horizontal wells within this spacing unit.

RESPECTFULLY SUBMITTED:

A handwritten signature in black ink, appearing to read 'W. Thomas Kellahin', written over the printed name.

W. THOMAS KELLAHIN  
KELLAHIN & KELLAHIN  
706 Gonzales Road  
Santa Fe, New Mexico 87501  
(505) 982-4285

Certificate No. MAGON McDONALD 12185

DISTRICT I  
162E N. French Dr., Hobbs, NM 88240

DISTRICT II  
1301 W. Grand Avenue, Artesia, NM 88210

DISTRICT III  
1000 Rio Brazos Rd., Aztec, NM 87410

DISTRICT IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico  
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION  
1220 South St. Frances Dr.  
Santa Fe, NM 87505

Form C-102  
Revised October 12, 2005  
Submit to Appropriate District Office  
State Lease - 4 Copies  
Fee Lease - 3 Copies

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code 97489	Pool Name Wildcat; Wolfcamp
Property Code	Property Name SWALE 1525-16 STATE	Well Number 2
OGRID No.	Operator Name PARALLEL PETROLEUM CORPORATION	Elevation 3498'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	16	15 S	25 E		760	SOUTH	190	WEST	CHAVES

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	16	15 S	25 E		760	SOUTH	660	EAST	CHAVES

Dedicated Acres 32e	Joint or Infill	Consolidation Code	Order No.
------------------------	-----------------	--------------------	-----------

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

NOTE:  
1) Plane Coordinates shown hereon are Transverse Mercator Grid and Conform to the "New Mexico Coordinate System", New Mexico East Zone, North American Datum of 1927. Distances shown hereon are mean horizontal surface values.

EXHIBIT  
B

Coordinate Table

Description	Plane Coordinate
Swale 1525-16 State #2	X = 482,559.1
Surface Location	Y = 731,150.8
Swale 1525-16 State #2	X = 483,028.8
Penetration Point	Y = 731,156.3
Swale 1525-16 State #2	X = 487,004.5
Bottom Hole Location	Y = 731,203.0

Project Area

Producing Area

190'  
660'  
760'

(PP)  
(SL)

(BHL)

660'  
760'

OPERATOR CERTIFICATION

I hereby certify the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or undivided mineral interests in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature: *Deane Durham* Date: 4-9-07

Printed Name: Deane Durham

SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision and that the same is true and correct to the best of my belief.

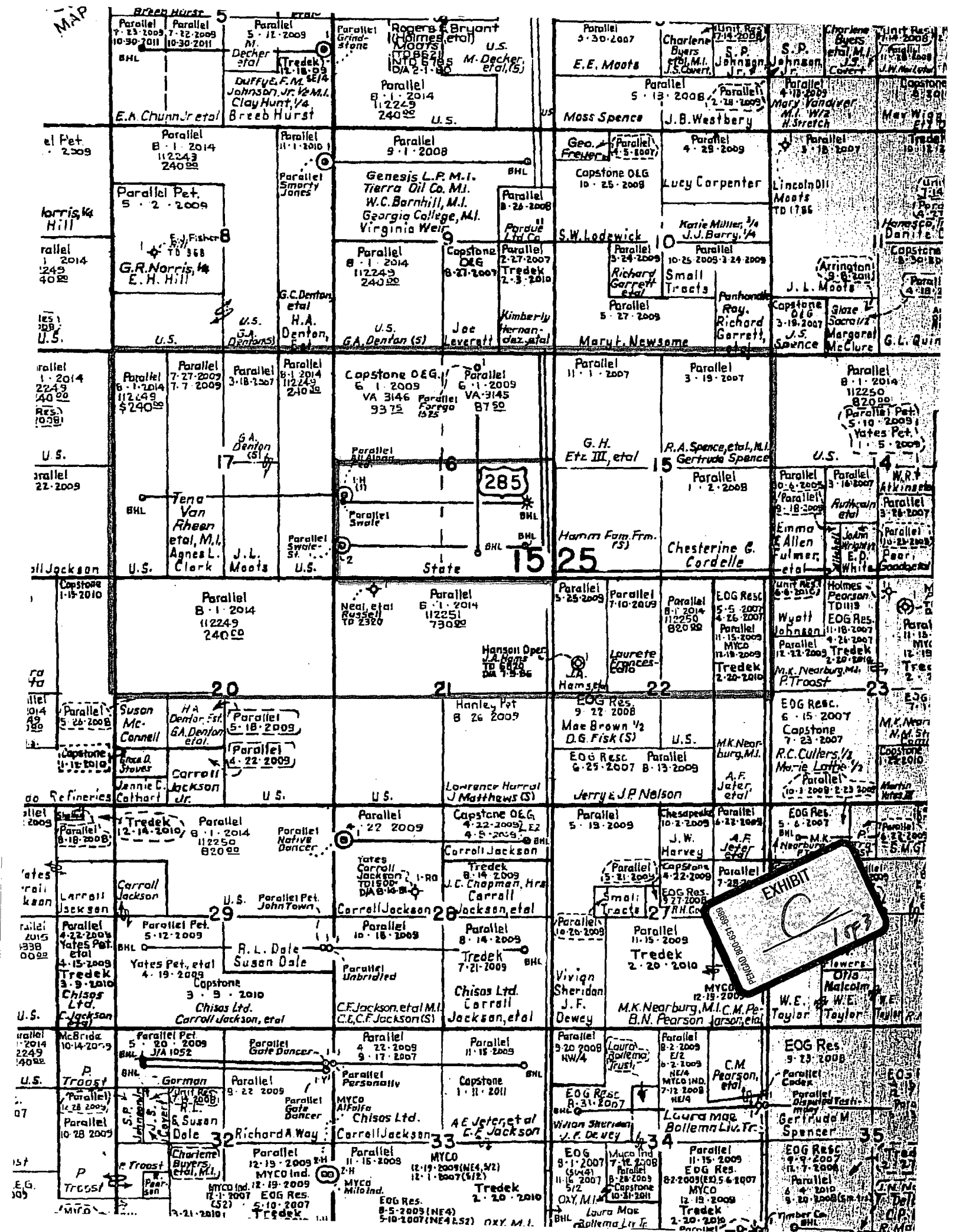
October 12, 2006

Date of Survey

Signature & Seal of Professional Surveyor

W.O. Num. 2006-1003

Certificate No. MACON McDONALD 12185





**Parallel Petroleum Corporation's Notice List  
For Swale 1525-16 State Com Wells No. 1 and 2**

Tract 1: N/2 of Sec 15 (Undrilled)

- (a) Parallel and
- (b) Capstone Oil & Gas Company, L.P.
- (c) CMW Interests, Inc.

Tract 2: S/2 of Sec 15 (Undrilled)

- (a) Parallel and
- (b) Capstone Oil & Gas Company, L.P.

Tract 3: N/2 of Sec 16 (Undrilled)

- (a) Parallel and
- (b) Capstone Oil & Gas Company, L.P.

Tract 4: N/2 of Sec 17 (Undrilled)

- (a) Parallel and
- (b) Capstone Oil & Gas Company, L.P.
- (d) CMW Interests, Inc. (W/2E/2)
- (e) Egler Exploration, Inc. (W/2E/2)

Tract 5: S/2 of Sec 17 (Drilled)

- (a) Parallel and
- (b) Capstone Oil & Gas Company, L.P.
- (c) CMW Interests, Inc. (W/2E/2)
- (d) Egler Exploration, Inc. (W/2E/2)

Tract 6: N/2 of Sec 20 (Undrilled)

- (a) Parallel and
- (b) Capstone Oil & Gas Company, L.P.

Tract 7: N/2 of Sec 21 (Undrilled)

- a) Parallel and
- (b) Capstone Oil & Gas Company, L.P.

Tracts 8: N/2 of Sec 22 (Undrilled)

- (a) Parallel and
- (b) Capstone Oil & Gas Company, L.P.
- (c) CMW Interests, Inc. (E/2NE/4)
- (d) Elger Exploration, Inc. (E/2NE/4)
- (e) Unleased mineral interest owners:
  - a. A. Gayle Hudgens. a single woman  
P.O. Box 25561  
Dallas, TX 75225

- b. Sacramento Partners Limited Partnership  
105 South Fourth Street  
Artesia. NM 88210
- c. Spiral, Inc.  
P.O. Box 1933  
(address)
- e. Sharbro Oil Ltd. Co.  
P.O. Box 829  
Artesia, NM 88211
- f. Southwest Resources, Inc.  
1111 West Country Club Road  
Roswell, NM 88201
- g. Lobos Energy Partners, LLC  
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- h. Estate of W. E. Flint, dec.  
Dona Ana County, NM PC #5171  
Elaine B. Flint, widow and exec.  
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- i. Margaret Louise Doyle & John Steven Doyle,  
3747 - 66 Campana South  
Oceanside, CA 92054
- j. Martin Yates III  
c/o Myco Industries, Inc. P. o. Box 840  
Artesia NM 88211

**KELLAHIN & KELLAHIN**  
**Attorney at Law**

**W. THOMAS KELLAHIN**  
**706 GONZALES ROAD**  
**SANTA FE, NEW MEXICO 87501**

**TELEPHONE 505-982-4285**  
**FACSIMILE 505-982-2047**  
**TKELLAHIN@COMCAST.NET**

August 17, 2007

**CERTIFIED MAIL-RETURN RECEIPT REQUESTED**

**NOTICE OF THE FOLLOWING NEW MEXICO OIL CONSERVATION  
DIVISION ADMINISTRATIVE CASE:**

*OFFSETTING INTEREST OWNERS:*

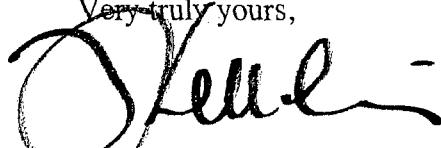
**Re:** Administrative Application of Parallel Petroleum Corporation  
for authorization to simultaneously dedicate  
a standard gas spacing and proration unit in the  
Wolfcamp formation to two horizontal wellbores,  
including an exemption to the well density requirements  
of Rule 104.D, Chaves County, New Mexico

Dear interest owner:

On behalf of Parallel Petroleum Corporation please find enclosed a copy of  
its referenced administrative application. This notice is based upon records that  
indicate that you have an interest in adjoining and offsetting tracts and are parties  
affected by this application

If you have no objection, then there is nothing for you to do. If you are  
willing to waive objection, please sign this letter as indicated and return it to me.  
However, should you have any objection to the Division approving this  
application, then it will be necessary for you to file a written objection with the  
New Mexico Oil Conservation Division, 1220 South Saint Francis Drive, Santa  
Fe, New Mexico 87505 within twenty (20) days of the date of this letter. Failure  
to file a timely objection will preclude you from objecting at a later date.

Very truly yours,

  
W. Thomas Kellahin

**WAIVER OF OBJECTION:**

By: \_\_\_\_\_ with authority for  
and on behalf of \_\_\_\_\_  
Date: \_\_\_\_\_



**KELLAHIN & KELLAHIN**  
**Attorney at Law**

**W. THOMAS KELLAHIN**  
**706 GONZALES ROAD**  
**SANTA FE, NEW MEXICO 87501**

TELEPHONE 505-982-4285  
FACSIMILE 505-982-2047  
TKELLAHIN@COMCAST.NET

August 17, 2007

**HAND DELIVERED**

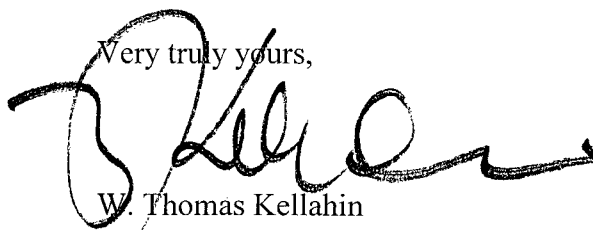
Mr. Mark Fesmire, P.E., Director  
Oil Conservation Division  
1220 South Saint Francis Drive  
Santa Fe, New Mexico 87505

Re: Administrative Application of Parallel Petroleum Corporation  
for authorization to simultaneously dedicate  
a standard gas spacing and proration unit in the  
Wolfcamp formation to two horizontal wellbores,  
including an exception to the well density requirement  
of Division Rule 104.D, Chaves County, New Mexico  
S/2 Section 16, T15S, R25E  
Swale 1525-16 State Well No. 1 and 2

Dear Ms. Fesmire:

On behalf of Parallel Petroleum Corporation, please find enclosed our  
referenced administrative application.

Very truly yours,



W. Thomas Kellahin

cc: Parallel Petroleum Corporation  
Attn: Mike Gray

RECEIVED  
2007 AUG 17 AM 11 53



**STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
OIL CONSERVATION DIVISION**

**IN THE MATTER OF THE ADMINISTRATIVE APPLICATION  
OF PARALLEL PETROLEUM CORPORATION FOR  
AUTHORIZATION TO SIMULTANEOUSLY DEDICATED  
A STANDARD SPACING AND PRORATION UNIT IN THE  
WOLFCAMP FORMATION TO TWO HORIZONTAL WELLS  
INCLUDING AN EXEMPTION TO THE WELL DENSITY  
REQUIREMENT OF RULE 104.D,  
CHAVES COUNTY, NEW MEXICO.**

ADMINISTRATIVE APPLICATION

Parallel Petroleum Corporation ("Parallel") by its attorneys, Kellahin & Kellahin, seeks approval to simultaneously dedicate a standard gas spacing and proration unit in the Wolfcamp formation to two horizontal wellbores including an exemption to the well density requirements of Rule 104.D, Chaves County, New Mexico. Applicant seeks authorization to dedicate a standard 320-acre spacing and proration unit comprised of the S/2 of Section 16, Township 15 South, Range 25East, Chaves County, New Mexico in the Wolfcamp formation to the following two wells:

(a) The Swale 1525-16 State Well No 2 (API #3000563924) to be drilled at an unorthodox surface location 760 feet FSL and 190 feet FWL (Unit M) and then to penetrate the Wolfcamp formation within the standard producing area window at a standard subsurface location approximately 660 feet FWL and 760 feet FSL (Unit M) and then drilled horizontally in an easterly direction staying within the producing area not less than 660 feet from each of the end and side boundaries of this spacing unit and ending at a standard bottom hole location 760 feet FSL and 660 feet FEL

(b) The Swale 1525-16 State Well No. 1 (API #3000563886) that has been drilled at an unorthodox surface location 1880 feet FSL and 208 feet FWL (Unit L) and penetrated the Wolfcamp formation within the standard producing area window at a standard subsurface location approximately 660 feet FWL and 660 feet FSL (Unit L) and then was drilled horizontally in an easterly direction staying within the producing area not less than 660 feet from each of the end and side boundaries of this spacing unit and ending at a standard bottom hole location 1880 feet FSL and 660 feet FEL

In support of its application, Parallel states:

- (1) Parallel is the current operator of the Swale 1525-16 State Well No. 1 (API #3000563886) that has been drilled and completed as a horizontal well in the N/2S/2 of Section 16, T15S, R25E. **See Exhibit "A" attached**
- (2) Parallel has obtained approval of its APD to drill second horizontal well in the S/2S/2 of Section 16, T15S, R25E being the Swale 1525-16 Well No. 2 (API #3000563924). **See Exhibit "B" attached**
- (3) Division Rule 111 provides for the rules and regulations of the drilling of directional wells and by definition includes "horizontal" wells but apparently does not limited the number of horizontal wells that can be drilled within a Project Area. Instead Rule 111 refers to a project area "that is enclosed by the outer boundaries of a spacing unit or a combination of complete spacing units," and incorporates by reference Rule 104 to define a "spacing unit"
- (4) Division Rule 104.C (2) allows two wells in a 320-acre spacing unit with each well located in a different 160-tract of the 320-acre spacing unit. This rule appears not to specifically address horizontal wells.
- (5) Division Rule 104.D (3) States: "number of wells per spacing unit. Exceptions to the provisions of statewide rules or special pool orders concerning the number of wells allowed per spacing unit may be permitted by the Director only after notice and opportunity for hearing. Notice shall be given to those "affected parsons" defined by Rule 1207.A (2)."
- (6) The Division Legal Examiner, David K. Brooks, has advised the notice for this type of case, "affected parties" are: (a) all each operator of an adjoining and offsetting 320-acre drilled or undrilled spacing units (direct or diagonal offsets) (b) if undrilled, then to the working interest owners and unleased mineral owners, (c) if applicant is also the offsetting operator, then to its working interest owners, (d) if applicant is the offsetting operator and the only working interest owners, then to its lessors, (e) if the offsetting section has no spacing unit, then the applicant and presume the orientation closest to the subject spacing unit.

- (7) Parallel has provided written notice of hearing to all “affected parties, including those listed on the attached located map and index. **Exhibit “C”** and the notice letter attached as **Exhibit “D”**
- (8) Parallel’s enclosed exhibits demonstrate that because of the low permeability of the Wolfcamp formation in this area:
- a. the actual area being depleted by the first horizontal well is generally limited to the north half of this spacing unit, being the N/2S/4 of Section 16, and it not effectively recovery either the gas underlying the S/2 of Section 16 or adversely affecting the correlative rights of the offsetting interest owners.
  - b. A second horizontal well is needed by the south half of this spacing unit, being the S/2S/2 of Section 16, in order to provide a opportunity to recovery gas that might otherwise not be recovered under the S/2 of Section 16 and in doing so will not adversely affect the correlative rights of the offsetting interest owners.
- (9) Exhibit “E” is a written summary prepare by Parallel’s petroleum geologist and petroleum engineer with supporting exhibits:
- (a) paleogeography of the Permian basin---see Exhibit “F”
  - (b) NW shelf stratigraphic chart---see Exhibit G
  - (c) Cross Section & Trap Diagram---see Exhibit H
  - (d) Alysheba No. 1-Map View—see Exhibit I
  - (e) Alysheba No. Stage 2-Map View—Exhibit J
  - (f) Conclusions—Exhibit K
  - (g) Gas Analysis from Foreso 152506 State E-1 well,see Exhibit L
  - (h) Pore Throat Size Histogram—see Exhibit M
  - (i) Three well cross-section (Large display)—see Exhibit N
- (10) These exhibit are basically the same data presented to the Division’s at a meeting on February 13, 2007 attended by members of the industry and the Division Chief Engineer, Richard Ezeanyim, and Division’s attorney, David K. Brooks.
- (11) Approval of this application will not impair the correlative rights of any other interest owner in the area and will afford Parallel the opportunity to utilize two horizontal wells to produce the Wolfcamp formation gas reserves from this GPU.

(12) Approval of this application will be in the best interests of conversations, the prevention of waste and the protection of correlative rights.

WHEREFORE, Parallel Petroleum Corporation requests that this the Oil Conservation Division enter its order granting an exception to the well density requirements of Rule 104.B and authorize the simultaneous dedication of two horizontal wells within this spacing unit.

RESPECTFULLY SUBMITTED:

A handwritten signature in black ink, appearing to read 'W. Thomas Kellahin', written over the printed name.

W. THOMAS KELLAHIN  
KELLAHIN & KELLAHIN  
706 Gonzales Road  
Santa Fe, New Mexico 87501  
(505) 982-4285



DISTRICT I  
1625 N. French Dr., Hobbs, NM 88240

DISTRICT II  
1301 W. Grand Avenue, Artesia, NM 88210

DISTRICT III  
1000 Rio Brazos Rd., Artesia, NM 87410

DISTRICT IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico  
Energy, Minerals & Natural Resources Department

**OIL CONSERVATION DIVISION**  
1220 South St. Francis  
Santa Fe, NM 87505

Form C-102  
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Fee Lease - 3 Copies

☐ AMENDED REPORT

**WELL LOCATION AND ACREAGE DEDICATION PLAT**

API Number	Pool Code <b>97489</b>	Pool Name <b>Wildcat; Wolfcamp</b>
Property Code	Property Name <b>SWALE 1525-16 STATE</b>	Well Number <b>1</b>
OGRID No.	Operator Name <b>PARALLEL PETROLEUM CORPORATION</b>	Elevation <b>3501'</b>

**Surface Location**

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
L	16	15 S	25 E		1880'	SOUTH	208'	WEST	CHAVES

**Bottom Hole Location If Different From Surface**

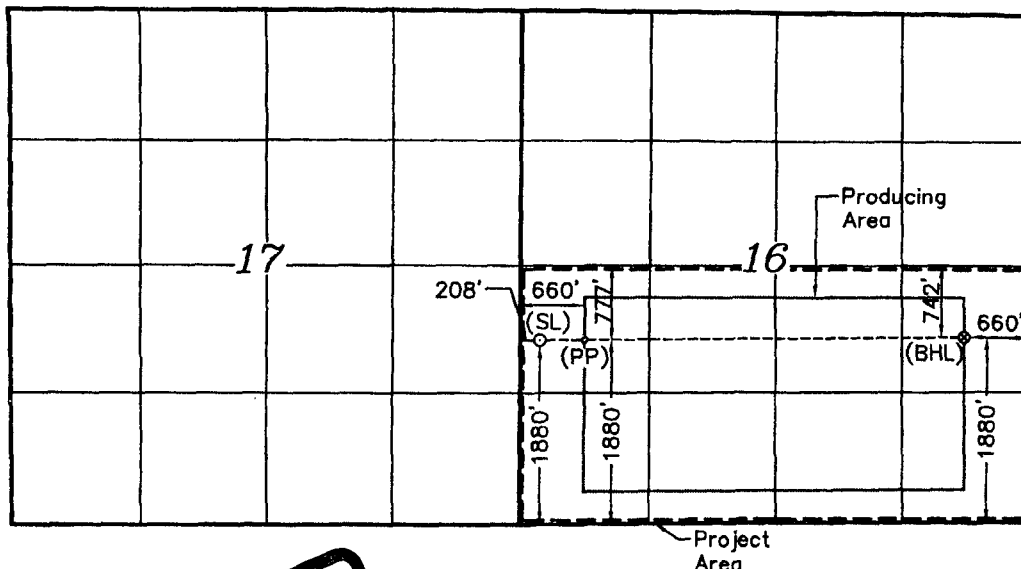
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
I	16	15 S	25 E		1880'	SOUTH	660	EAST	CHAVES

Dedicated Acres <b>320</b>	Joint or Infill	Consolidation Code	Order No.
-------------------------------	-----------------	--------------------	-----------

**NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION**

**NOTE:**

- 1) Plane Coordinates shown hereon are Transverse Mercator Grid and Conform to the "New Mexico Coordinate System", New Mexico East Zone, North American Datum of 1927. Distances shown hereon are mean horizontal surface values.



**OPERATOR CERTIFICATION**

I hereby certify the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or undivided mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature: *[Signature]* Date: **12-27-06**  
Printed Name: **Gay E. Miller**  
**Agent, Parallel Petroleum Company**

**SURVEYOR CERTIFICATION**

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision and that the same is true and correct to the best of my belief.

October 12, 2006  
Date of Survey  
Signature & Seal of Professional Surveyor **KMT**

*[Signature]*  
W.O. Num. 2006-1002  
Certificate No. **MACON McDONALD 12185**

Coordinate Table	
Description	Plane Coordinate
Swale 1525-16 State #1	X = 462,579.7
Surface Location	Y = 732,271.0
Swale 1525-16 State #1	X = 463,031.5
Penetration Point	Y = 732,276.2
Swale 1525-16 State #1	X = 466,997.4
Bottom Hole Location	Y = 732,322.7



DISTRICT I  
1825 N. French Dr., Hobbs, NM 88240

State of New Mexico  
Energy, Minerals & Natural Resources Department

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OIL CONSERVATION DIVISION  
1220 South St. Frances Dr.  
Santa Fe, NM 87505

DISTRICT III  
1000 Rio Brazos Rd., Aztec, NM 87410

DISTRICT IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505

☐ AMENDED REPORT

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Property Code	Property Name SWALE 1525-16 STATE	Well Number 2
OGRID No.	Operator Name PARALLEL PETROLEUM CORPORATION	Elevation 3498'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	16	15 S	25 E		760	SOUTH	190	WEST	CHAVES

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	16	15 S	25 E		760	SOUTH	660	EAST	CHAVES

Dedicated Acres 32.0	Joint or Infill	Consolidation Code	Order No.
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<div>Project Area</div>	<div>Coordinate Table DescriptionPlane Coordinate Swale 1525-16 State #2X = 482,559.1 Surface LocationY = 731,150.8 Swale 1525-16 State #2X = 483,028.8 Penetration PointY = 731,156.3 Swale 1525-16 State #2X = 487,004.5 Bottom Hole LocationY = 731,203.0</div>	<div>SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision and that the same is true and correct to the best of my belief.  October 12, 2006 Date of Survey Signature &amp; Seal of Professional Surveyor <i>[Signature]</i> W.O. Num. 2006-1003 Certificate No. MACON McDONALD 12185</div>
<div>Producing Area</div>		
<div>190' 660' (SL) 760'</div>	<div>(PP) 760'</div>	<div>(BHL) 660' 760'</div>



[illegible]

**Parallel Petroleum Corporation's Notice List  
For Swale 1525-16 State Com Wells No. 1 and 2**

Tract 1: N/2 of Sec 15 (Undrilled)

- (a) Parallel and
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Dallas, TX 75225



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2125 Thomas Dr.  
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3747 - 66 Campana South  
Oceanside, CA 92054
- j. Martin Yates III  
c/o Myco Industries, Inc. P. o. Box 840  
Artesia NM 88211

**KELLAHIN & KELLAHIN**  
**Attorney at Law**

**W. THOMAS KELLAHIN**  
**706 GONZALES ROAD**  
**SANTA FE, NEW MEXICO 87501**

**TELEPHONE 505-982-4285**  
**FACSIMILE 505-982-2047**  
**TKELLAHIN@COMCAST.NET**

August 17, 2007

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*OFFSETTING INTEREST OWNERS:*

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New Mexico Oil Conservation Division, 1220 South Saint Francis Drive, Santa  
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to file a timely objection will preclude you from objecting at a later date.

Very truly yours,



W. Thomas Kellahin

**WAIVER OF OBJECTION:**

By: \_\_\_\_\_ with authority for  
and on behalf of \_\_\_\_\_  
Date: \_\_\_\_\_



**Wolfcamp Reservoir Development**  
**Section 16, T15S, R25E**  
**Chaves Co., New Mexico**  
**Case # 13965**

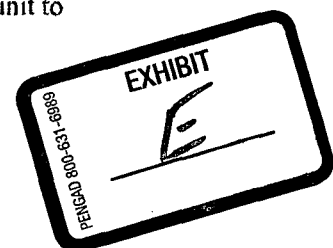
This Wolfcamp gas reservoir is interpreted as the sabkha shelf model along the Northwest carbonate platform. The Wolfcamp reservoir is contained within the restricted lagoon-platform facies belt where dolomitization and fracturing has occurred to enhance the porosity and in deep enough water so that evaporates are not prevalent to occlude porosity. Up-dip, north to northwest of the reservoir are terrestrial deposits which do include evaporates that cement the porosity and act as a seal for the Wolfcamp stratigraphic trap. Down-dip, south to southeast, of the dolomitized Wolfcamp reservoir facies belt are tight limestones that do not contain the reservoir development.

There are three alternating depositional cycles. The matrix porosity is comprised of a dolomitized fusulinid wackestone-packstone overlain by a burrowed lime mud overlain by a lagoonal shale which is the maximum flooding event. The reservoir also contains natural fractures. The principal maximum stress direction is predominantly north-south. The formation dips to the east-southeast at 1 degree. The average gross thickness of the Wolfcamp varies from 25'-50' with an average net thickness of a few feet to 25' and an average porosity less than 8%.

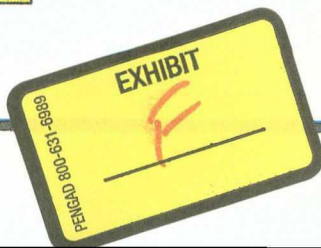
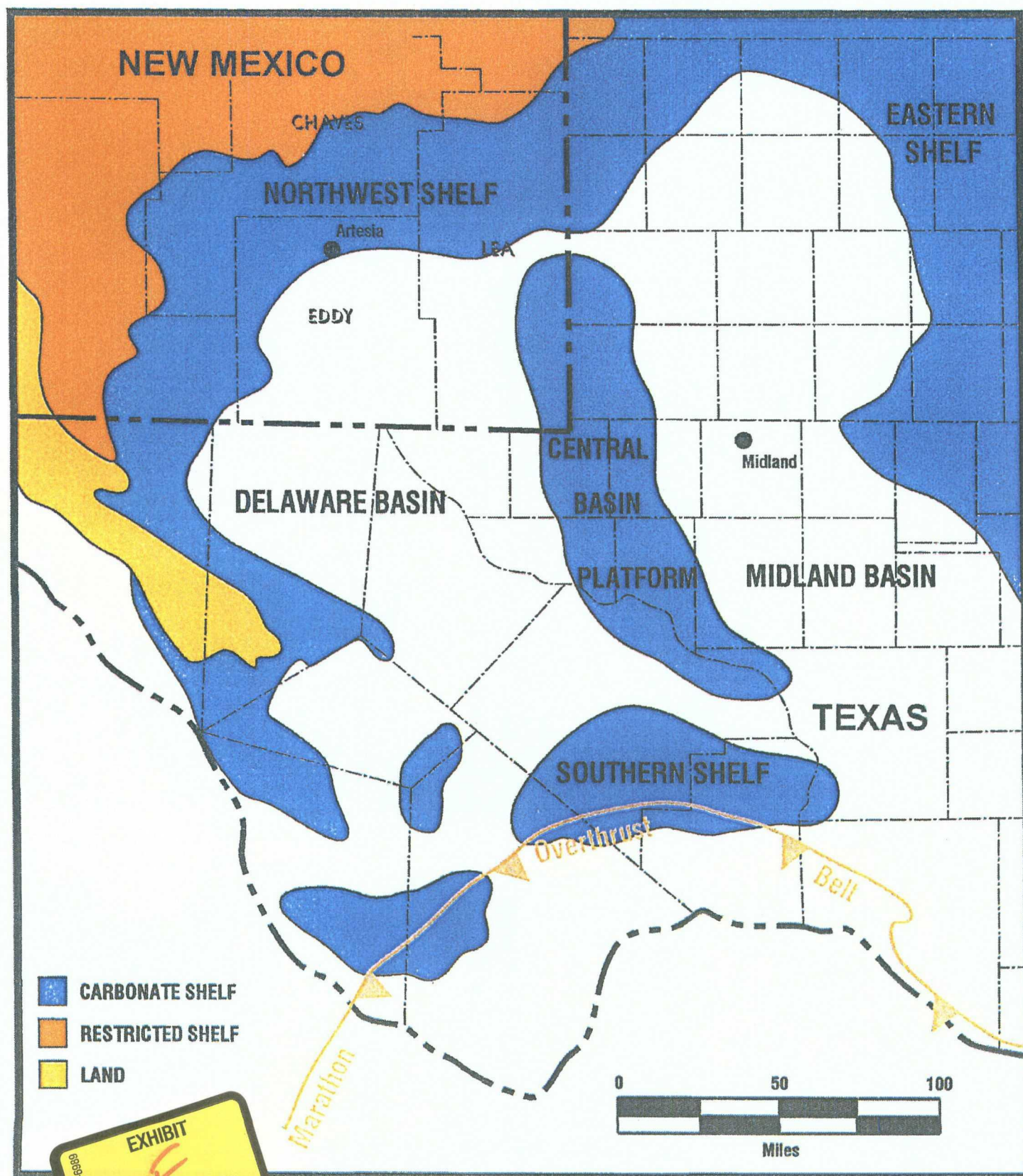
Planned spacing between horizontal laterals in the south-half of section 16 is 1160'. The Swale 1525-16 State #1 has been drilled in the north-half of the south-half and actual footages for the penetration point and total depth within the Wolfcamp pay are:  
Surface Location @ 1880' FSL and 208' FWL, Section 16, T15S, R25E  
Penetration Point @ 5183' measured depth, 1850' FSL and 751' FWL  
Bottom-Hole Location @ 8924' measured depth, 1906' FSL and 790' FEL  
Perforations are from top perf at 5290' measured depth to bottom perf at 8822' measured depth. The Swale 1525-16 State #2 will be in the south-half of the south-half, and planned surface, penetration point and total depth are:  
Surface Location @ 760' FSL and 190' FWL, Section 16, T15S, R25E  
Penetration Point @ 760' FSL and 660' FWL, Bottom-Hole Location @ 760' FSL and 660' FEL

Recommended fracture half-lengths for this formation in the area are 1,100' in order to drain 160 acres. This would require 4 horizontal wells in parallel to drain a 640-acre section. This 1,100' fractured half-length yields an approximate proppant-fractured half-length of 500-600' and an effective producible half-length of 300-400'. Microseismic monitoring data from wells in the area fractured using Parallel Petroleum's preferred stimulation method show a fractured half-length of 900' and therefore the estimated producible half-length estimate is shorter than the recommended 300-400'. An optimistic estimate of 300' producible half-length of both the Swale #1 and the Swale #2 would create an unproductive interval along the length of and between the laterals of 560'.

In conclusion, given: low permeability of the dolomite (< .01 - .02 md), small net pay interval (< 20' in section 16) and low porosity of the interval (< 3% - 9% - ~ 7% in section 16), the Wolfcamp formation should be produced using 2 parallel horizontal wells per 320-acre unit to efficiently drain the unit.



# WOLFCAMPIAN (PERMIAN) PALEOGEOGRAPHY OF THE PERMIAN BASIN





**Wolfcamp Reservoir Development**  
**Section 16, T15S, R25E**  
**Chaves Co., New Mexico**  
**Case # 13965**

This Wolfcamp gas reservoir is interpreted as the sabkha shelf model along the Northwest carbonate platform. The Wolfcamp reservoir is contained within the restricted lagoon-platform facies belt where dolomitization and fracturing has occurred to enhance the porosity and in deep enough water so that evaporates are not prevalent to occlude porosity. Up-dip, north to northwest of the reservoir are terrestrial deposits which do include evaporates that cement the porosity and act as a seal for the Wolfcamp stratigraphic trap. Down-dip, south to southeast, of the dolomitized Wolfcamp reservoir facies belt are tight limestones that do not contain the reservoir development.

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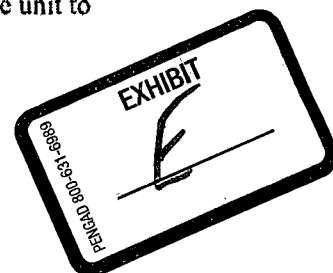
The Swale 1525-16 State #2 will be in the south-half of the south-half, and planned surface, penetration point and total depth are:

Surface Location @ 760' FSL and 190' FWL, Section 16, T15S, R25E

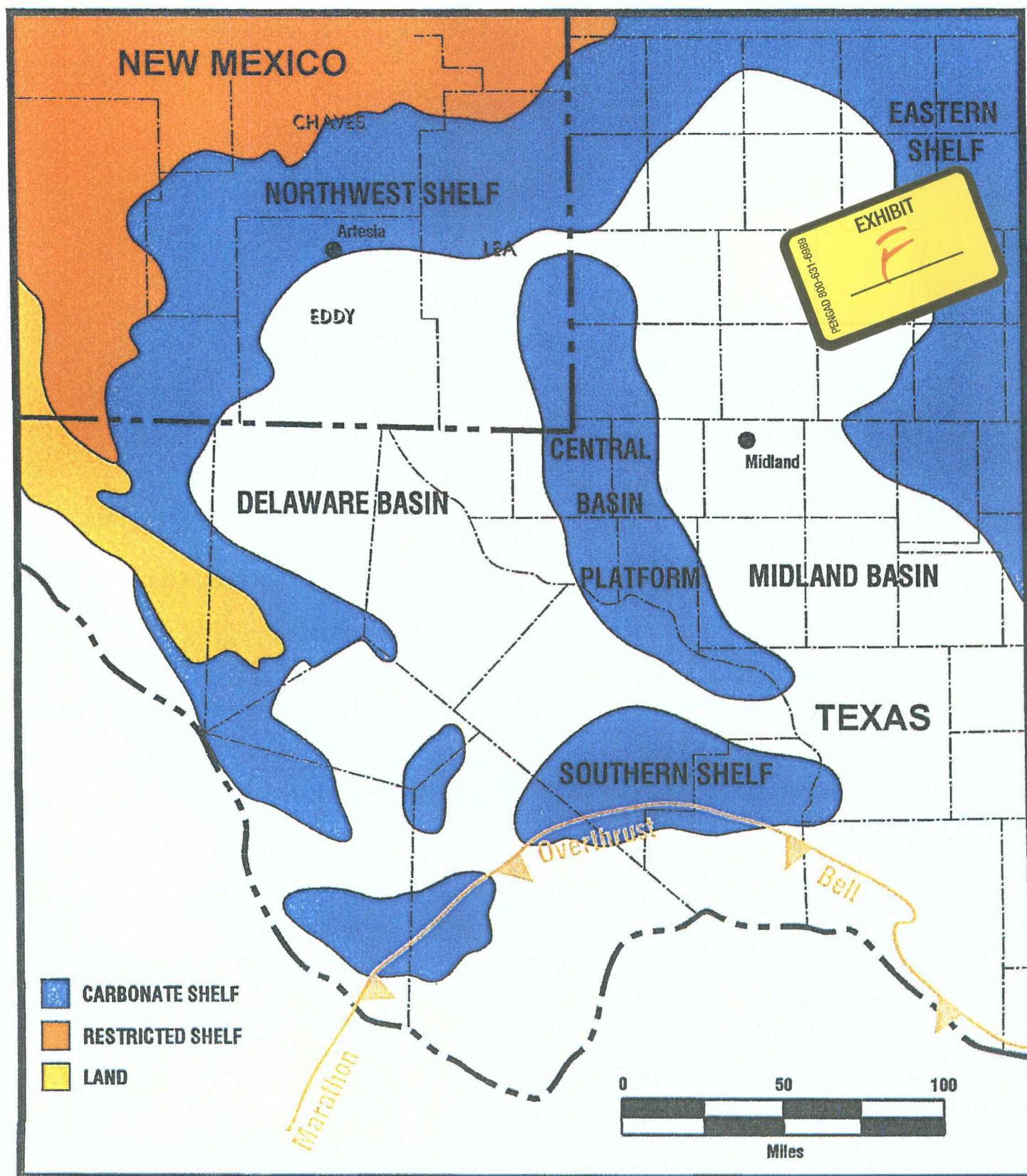
Penetration Point @ 760' FSL and 660' FWL, Bottom-Hole Location @ 760' FSL and 660' FEL

Recommended fracture half-lengths for this formation in the area are 1,100' in order to drain 160 acres. This would require 4 horizontal wells in parallel to drain a 640-acre section. This 1,100' fractured half-length yields an approximate proppant-fractured half-length of 500-600' and an effective producible half-length of 300-400'. Microseismic monitoring data from wells in the area fractured using Parallel Petroleum's preferred stimulation method show a fractured half-length of 900' and therefore the estimated producible half-length estimate is shorter than the recommended 300-400'. An optimistic estimate of 300' producible half-length of both the Swale #1 and the Swale #2 would create an unproductive interval along the length of and between the laterals of 560'.

In conclusion, given: low permeability of the dolomite (< .01 - .02 md), small net pay interval (< 20' in section 16) and low porosity of the interval (< 3% - 9% - ~ 7% in section 16), the Wolfcamp formation should be produced using 2 parallel horizontal wells per 320-acre unit to efficiently drain the unit.



# WOLFCAMPIAN (PERMIAN) PALEO GEOGRAPHY OF THE PERMIAN BASIN



# Northwest Shelf Stratigraphic Chart

Age		Unit Name		HC's	Approx. Depth
Permian 289-248 MYA	Ochoan	Rustler			Top Reservoir ~5000-5500'
		Salado			
	Guadalupian	Tansill			
		Eumont	Yates	☉ ☀	
			Seven Rivers	☉ ☀	
			Queen	☉ ☀	
			Grayburg	☉ ☀	
		San Andres		☉	
		Glorieta		☉	
	Leonardian	Yeso		☉ ☀	
		Abo		☉ ☀	
	Wolfcampian	Wolfcamp		☉ ☀	
Pennsylvanian 289-320 MYA		Cisco			
		Canyon			
		Strawn		☉ ☀	
		Atoka		☀	
		Morrow		☉ ☀	
Mississippian 320-363 MYA		Miss. Lime		☉ ☀	
		Woodford			
Devonian 409-363 MYA		Devonian		☀	
Silurian 439-409 MYA		U. Silurian			
		Fusselman		☉	
Ordovician 510-439 MYA		Montoya		☉	
		Simpson	McKee	☉ ☀	
			Waddell		
			Connell		
			Joins		
		Ellenburger		☀	
Cambrian 510-570 MYA					
Pre-Cambrian >570 MYA					

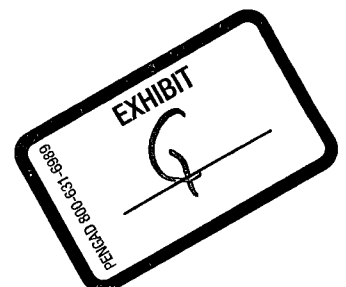
## LEGEND



Current Active Plays

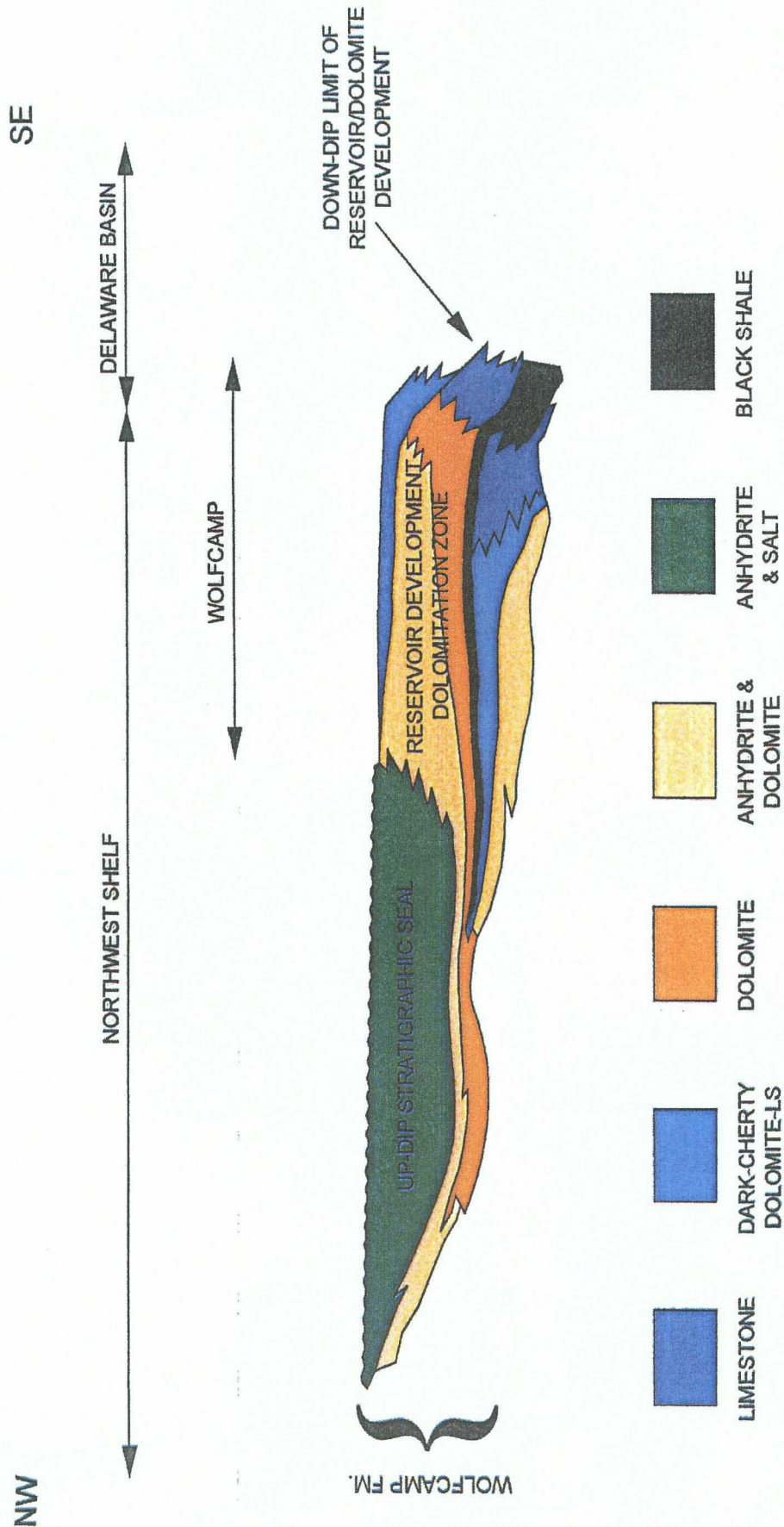
☉ Oil Producing Zones

☀ Gas Producing Zones





# CROSS SECTION & TRAP DIAGRAM

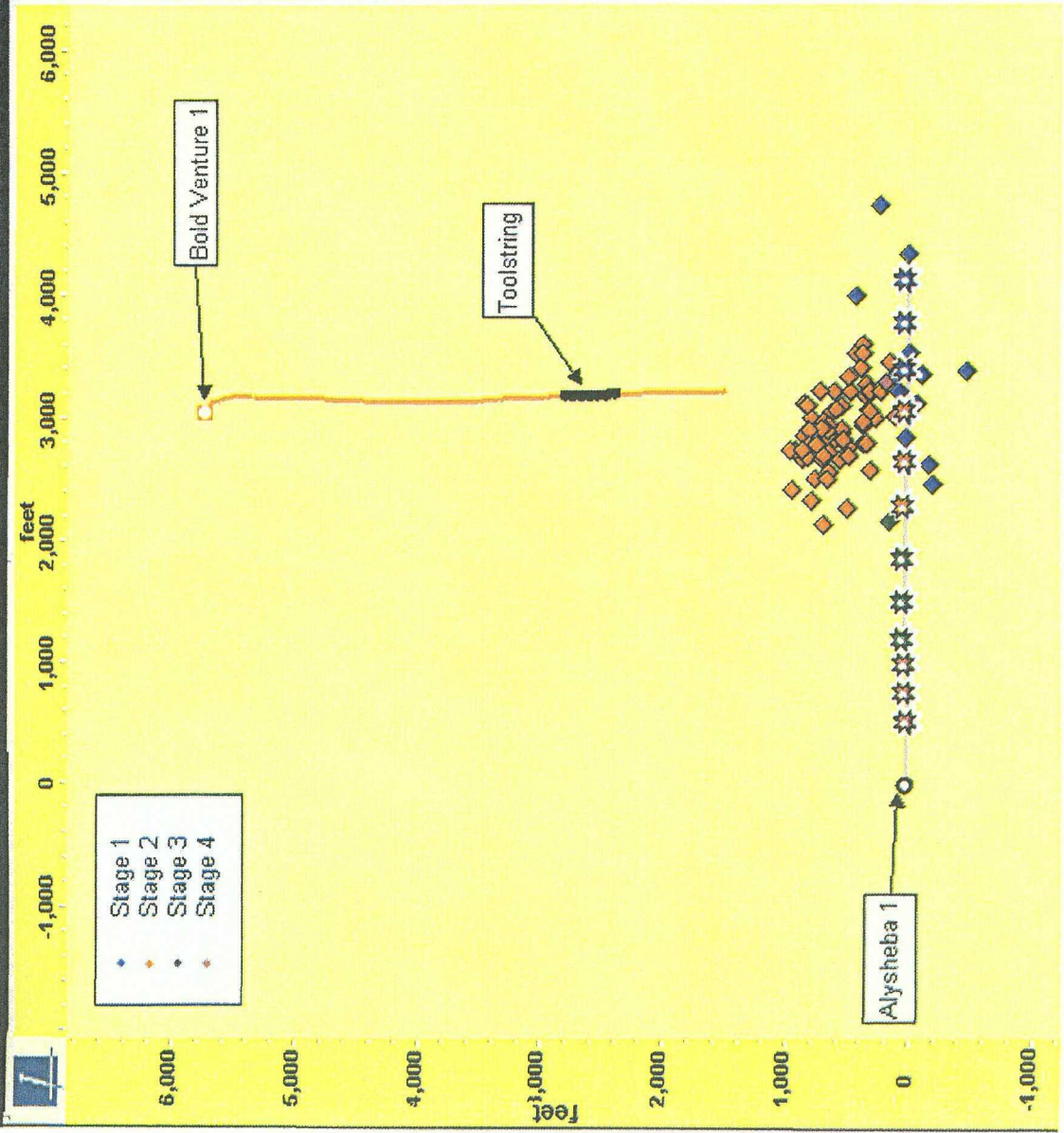


Northwest-southeast cross section across the Northwest Shelf/Delaware Basin transition. Rock types are differentiated illustrating the trap developed within the Wolfcamp reservoir. The pervasive evaporite deposits in the northwest act as a stratigraphic seal for the dolomitized reservoir developed down-dip. Further down structure the reservoir is limited by the lack of dolomite within tighter limestone and shale deposits.





# Alysheba No. 1 – Map View



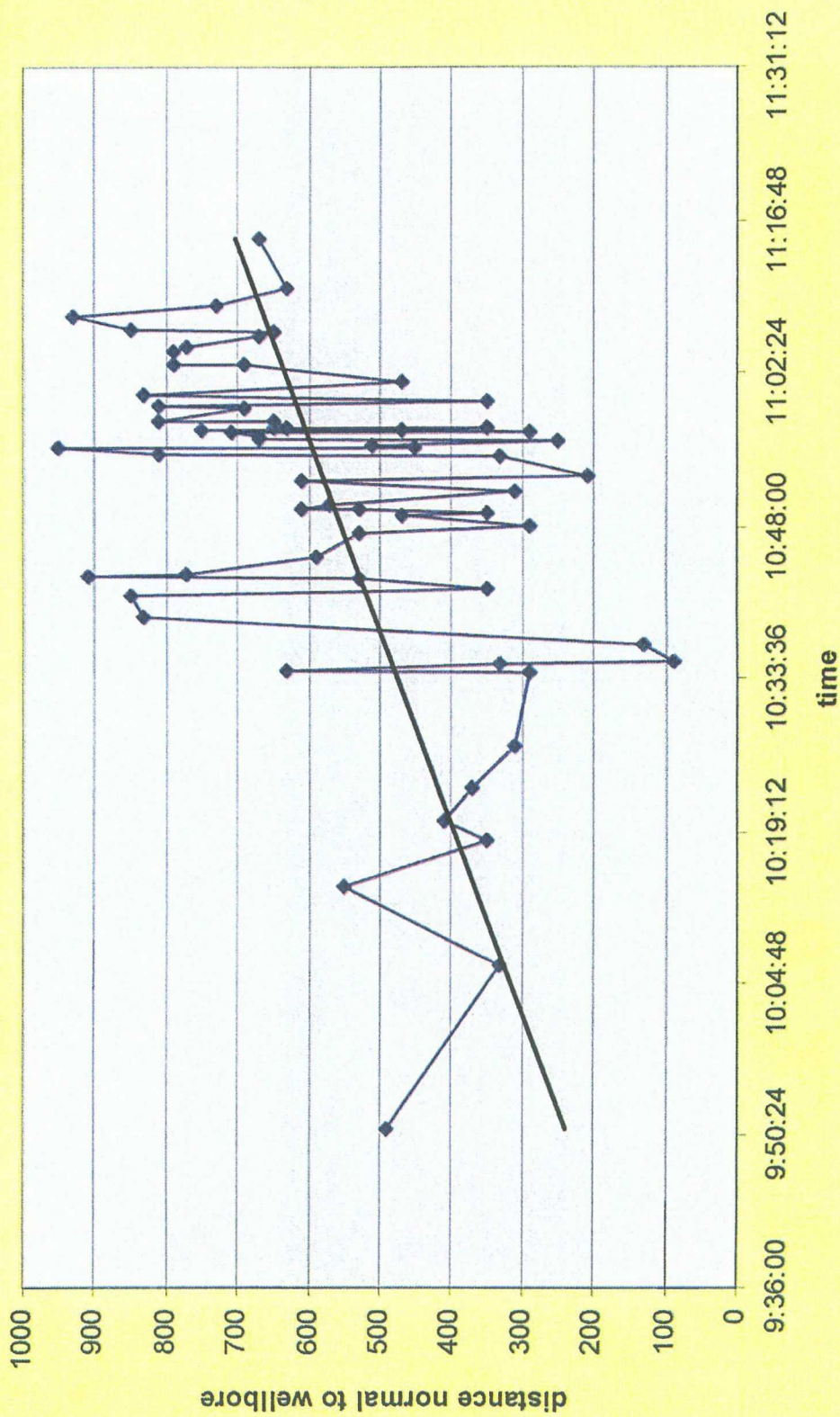
- Fracture Azimuths: Difficult to determine, possibly N-S.
- Fracture Half-Lengths: ~900' (measured North from wellbore)
- Most of the microseismic events were recorded during Stage 2. Only one event was detected during both Stages 3 and 4.
- Unclear why Stage 2 produced the majority of the events; perhaps interaction with faulting or fracture swarm near wellbore?

EXHIBIT

PERMID 000-631-6886



# Alysheba No. 1 Stage 2 - Map View



Pinnacle



## Conclusions

- Azimuth uncertain, but has a strong N-S component
- Possibility of a N35°E secondary component
- 250 ft of height
- 900 ft of half-length, longer than Seabiscuit, but still shorter than competitors
- Low degree of complexity
- Higher pressures may not be related to oblique initiation (all stages lack of tortuosity, presence of perf friction)





Wildcat Measurement Service  
P.O. Box 1836  
Artesia, New Mexico 88211-1836  
TollFree 888-421-9453  
Office 505-746-3481  
"Quality and Service is our First Concern"

PDS 06/25/00

Run No. 261213-02  
Date Run 12/13/2006  
Date Sampled 12/09/2006

Analysis for: PARALLEL PETROLEUM CORPORATION  
Well Name: FORESO 1525-16 STATE "B" #1

GPANGL 162

Field:  
Sta. Number:  
Purpose: SPOT  
Sampling Temp: 22.0 DEG F  
Volume/day: 1925 MCF/DAY  
Pressure on Cylinder: 60.0 PSIG

Producer: PARALLEL PETROLEUM CORP.  
County: CHAVES State: NM  
Sampled By: A.J.G.  
Atmos Temp: DEG F  
Formation:  
Line Pressure: 73.2 PSIA

GAS COMPONENT ANALYSIS

Pressure Base: 14.7300

		Mol %	GPM
Carbon Dioxide	CO2	4.3235	
Nitrogen	N2	0.6738	
Methane	C1	85.9676	
Ethane	C2	5.6524	1.5108
Propane	C3	1.9299	0.5314
Iso-Butane	IC4	0.2812	0.0920
Nor-Butane	NC4	0.4872	0.1536
Iso-Pentane	IC5	0.1606	0.0588
Nor-Pentane	NC5	0.1404	0.0508
Hexanes Plus	C6+	0.3834	0.1673
TOTAL		100.0000	2.5647

Real BTU Dry: 1078.92  
Real BTU Wet: 1060.14  
Real Calc. Specific Gravity: 0.6732  
Field Specific Gravity: 0.0000

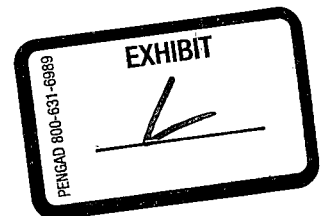
Standard Pressure: 14.6960  
BTU Dry: 1073.62  
BTU Wet: 1054.94

3 Factor: 0.9974  
N Value: 1.2948  
Avg Mol Weight: 19.4551  
Avg CuPt/Gal: 57.1122  
26 Lb Product: 0.4332  
Methane+ GPM: 17.1358  
Ethane+ GPM: 2.5647  
Propane+ GPM: 1.0538  
Butane+ GPM: 0.5225  
Pentane+ GPM: 0.2769

REMARKS:

Approved by: DON NORMAN

Wed Dec 13 10:13:35 2006





Company: Bold Energy  
 Well: Delilah State No. 1  
 Field: Runyan Ranch  
 Formation: Wolfcamp  
 Location: Eddy County, New Mexico  
 File: HOU-060947

<b>Sample:</b>	<b>6Bm</b>	un-	Host Plug	
Depth, feet:	4385.60	stressed	na	na
Klinkenberg Permeability, md:	0.005		-	-
Permeability to Air, md:	0.019		-	-
Swanson Permeability, md:	0.00001		-	-
Porosity, fraction:	0.013		-	-
maximum Sb/Pc, fraction:	0.00003			
R35, microns:	0.00583			
R50 (median pore throat radius):	0.00469			

## PORE THROAT SIZE HISTOGRAM

